The Iron Age

A Review of the Hardware and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 10 Warren Street, New York.

Vol. XIII: No. 13. *New York, Thursday, March 26, 1874.* *Four Dollars a Year. Single Copies, Ten Cents.*

Interior of the Main Pavillion of the Centennial.

By permission of Director General Goshorn, and through the courtesy of Mr. Calvert Vaux, architect, we are enabled to present this week a prospective view of the interior of the main Exhibition Building of the Centennial. This plan, we are informed, has been finally adopted. It is still uncertain whether the structure will be built of wood or iron, but the plan is equally well adapted to either material. The dimensions are also still under consideration, so we omit figures in our brief description.

The building is composed of twenty-one pavillions, seven in length and three in depth. The corners of the squares will be cut off so as to form octagonal open courts, of which there will be twelve, beside the 20 semi-octagons on the exterior. The pavillions will be covered with curved roofs, supported on arched ribs or trusses springing from the ground line at the angles and faces of the octagons. Beside these there will be arched ribs, extending from side to side of the squares. The galleries will not interfere with the floor space, but will be arranged in the recesses formed by the projections of the gables, and communicate by stairs with the floor level.

The sides of the octagonal courts, before mentioned, will be glazed to a hight of 53 feet, and will have ornamental heads and decorations of galvanized iron. The gables and fronts will be glazed to the full hight of the ceiling, and skylights provided in the roof, so that ample light will be secured with provision for preventing the direct rays of the sun from penetrating the building.

The interior of the building will be lined with suitable decorative material, colored, and finished to appropriate designs. The space between this lining and the galvanized iron covering will act as a non-conductor, and assist in keeping the building cool during the hot summer months, means for ventilation being provided in the upper part of the roof.

The accompanying picture is a reduction from the architect's plan, and presents the details of the design as clearly as is possible in the space we have been able to give it. A better idea of the general appearance of the interior of the building may be gained from this than from any picture yet given to the public, and though the effects of rich coloring is lacking, it will serve to show that the building will be impressive and beautiful, and in every way worthy of the use for which it is intended.

Locomotive works are talked of in Cincinnati.

Bell Founding.

From a paper lately read before the London Society of Arts, by Mr. Geo. Land, we take the following: There is a most excellent work about bells, edited by the Rev. H. T. Ellacombe, and called the "Bells of the Church," a supplement to the "Church Bells of Devon," and I was so much struck with the easily-understood description he gives there of bell founding, that I think I cannot do better than give it in his own words. He says: "It will be interesting to the general reader if I describe the modern process of bell casting. This I am better enabled to do by taking the establishment in Whitechapel, the oldest in London or in England." Before describing the process of casting a bell, it may be well to state that bell metal consists of an amalgam of copper and tin, in proportion of about three parts of copper to one of tin. There are, of course, various trade secrets as to the exact proportions of the different metals necessary to constitute a first class alloy. Mr. Denison in his book says, that "after many experiments he has come to the conclusion that the proper composition for bells is thirteen of copper to four of tin."

There is no great mystery after all in the bell founder's art, but extreme care is necessary, in order to produce a good toned bell, that all the preliminary operations should be conducted with the greatest exactness. Passing through various yards at the Whitechapel foundry—in which are stored quantities of old timber, old bell metal, and a multitude of odds and ends, in the shape of cannon and great masses of old copper destined one day for the furnace—we arrive at the molding room. In describing the casting of a bell it will be necessary to observe that it is nothing more than a layer of metal which has been run into the space between the mold and its outer covering and allowed to cool. The various parts of a bell may be described as the body, or barrel; the clapper, or striker, hanging on the inside; and the ear, or cannon, on its top or crown, by which it is hung in its chosen position in the tower.

The following description applies to all bells, large and small, the various modifications in the shape, &c., not interfering with the principle on which it is manufactured. The first principle to be observed, is the construction of the shape or form of the future bell, so as to ensure that due harmony in all the parts which shall give to it the proper degree of tone and vibration. Various theories have obtained in different countries, and among the various founders of our own country, as to the best proportions for bells; but the following scale has been proposed and generally followed at this foundry, as coming nearest to perfection. Taking the thickness of the sound-bow, or brim—that is, the part where the clapper strikes—a bell should measure in diameter at the mouth, 15 brims; in hight to the shoulder, 12 brims; and in width at the shoulder, 7½ brims, or half the width of the mouth. These proportions, however, are very variable, and depend greatly on the taste, experience and skill of the founder, an approximation merely being arrived at in these figures. Mr. Denison says: "The most essential point of all to be attended to in ordering bells is to require absolutely, and in spite of all protestations of the founders, that none of them, when finished, are to be thinner in the sound-bow, or thickest part, than one-thirteenth of the diameter." I know that some good old bells are a little thinner, but I never saw a new one that was less, and had at the same time anything of the soft and sweet tone which church bells ought to have. I can only account for the old ones bearing to be thinner, though by no means so thin as many modern ones, by the well known greater softness and toughness of the copper of old times, when they smelted less metal out of the ore. The small bells of a peal are always rightly made thicker in proportion than the large ones, and will run up one-eleventh of the diameter, the large ones being one-thirteenth. I would here observe that Mr. Denison goes most minutely into the why and the wherefore of the proportions of metal and the shape of bells; and I have selected Mr. Ellacombe's description of bell-founding, because I have thought it would be more generally understood. To the searcher after information both books are invaluable, one treating exhaustively on the constructive part, and only slightly on what I may call the archæological part of the question; and the other exhaustively on the archæological, and only slightly on the constructive. I believe that Mr. Denison is at issue with some of the bell-founders about the proportions and shapes; but that his theory is a right one seems entirely borne out by the fact that many most excellent peal of bells have been constructed under his instructions, and that he is consulted in almost every matter of importance. The size and proportions, then, of the future bells being ascertained, the making of the mold is proceeded with. The outer form of the core, by which the inner shape of the bell is determined, is made by means of a crook, which is made to revolve on the clay, &c., of which the mold is composed. This crook is a kind of double compass, the outer leg of which is in two parts, formed of wood and metal. The inner part (of metal) is cut or curved to the shape of the outside of the core, or inside of the intended bell; and the outer part (of wood) to the form the outside of the bell is to be made. This crook and compass is made to move on a pivot affixed to a beam above, and its lower end driven into the ground. In case of very large bells the mold is perfected in the pit in which they are to be cast. The crook is driven by the hand of the molder, and the molds being composed of plastic clay, etc., the form of the inner side of the bell is defined by a few revolutions of this simple machine. Thus is formed the core, or inner mold. The cope, or outer mold, is formed in much the same way, except that its inner surface is smoothed to form the outer side of the bell. The core is first roughly built up of brick work, with a hollow in the center. It is then plastered over with soft clay, etc., and molded as described, by the action of the crook, and is afterward dried by means of a fire in the hollow mentioned. When baked sufficiently hard, it is covered all over with a size of tan and grease. Over this size a coating of haybands and loam is laid, the exact thickness the bell is intended to be made: on this thickness the outer leg of the crook—the inner leg which formed the core having been removed—is made to rotate, and so forms the shape of the inside or the cope or outer mold. This thickening being thoroughly dried, upon it is formed the cope, or outer mold, upon the outer surface of which are formed ledges, by means of which, when dry, it is raised, and the thickening destroyed. Both are then retouched, any device or inscription being impressed upon the inside of the cope; it is re-lowered, and the hollow space between the cope and core is, of course, the exact shape the bell is to be. The head and staple to hold the clapper being now fitted above all, the mold may be said to be complete. A sufficient number of molds being now formed for the number of bells to be cast, the pit is filled in with earth, firmly rammed down, to prevent the copes rising when the metal is run in. The furnaces are now lighted, the metals in their proper proportion are melted—sometimes as much as twenty tons at a time—and from time to time tested, till found to be of the right temperature, when the furnace doors are opened, and the molten metal directed through properly constructed channels to each mold in succession, till the whole number of bells is cast. Sufficient time is allowed for cooling. The earth is dug away from around the molds, which are then destroyed, the bells being taken to the tuning room, where they are tried for note; and when tuning is necessary, which is almost always the case, the bell is securely fixed into a wooden frame by means of wedges, underneath a steam cutter, which is then made to descend; the gearing of the engine is then turned on, and the cutter revolving, cuts as much as may be required either from the inside of the bell in the region of the sound-bow to deepen the note, or from the edge of the lip to sharpen it.

A Locomotive on the Rampage.

A very extraordinary railroad accident occurred at Altoona, on Saturday, the 14th inst. A locomotive, standing in the yard of the Pennsylvania Railroad Company, was waiting at the ember pile to be cleaned, when a laborer jumped on her and attempted to move her a short distance backward. In so doing he ran the locomotive against another one a few yards behind, inflicting severe damage. He then started the engine forward, and, in a few seconds, losing control of her, jumped off, leaving the throttle valve wide open. The engine rapidly increased her speed and dashed through the round house, demolishing a heavy wooden door in her course. From the roundhouse she followed a light iron track, used for small truck cars, into the large machine shop, where over four hundred hands are employed, breaking another heavy door on her way.

Running through the immense shops the engine inflicted great damage. One man, walking along the track in the shop, was instantly killed, and another, running a drilling machine, was fatally injured. A number of valuable machines were damaged and a scene of great confusion followed. After running the whole length of the shop at a rate of 25 miles an hour, the engine came in contact with another door, demolishing it. Beyond the door was a trench between the machine and boiler shops about three feet deep and fifteen wide. The engine ran directly over this obstruction, leaping the three feet with the utmost ease, and finally landed in the boiler room, where she ended her course in a badly demoralized condition. Six thousand dollars is the estimate of the damages done by this little piece of carelessness.

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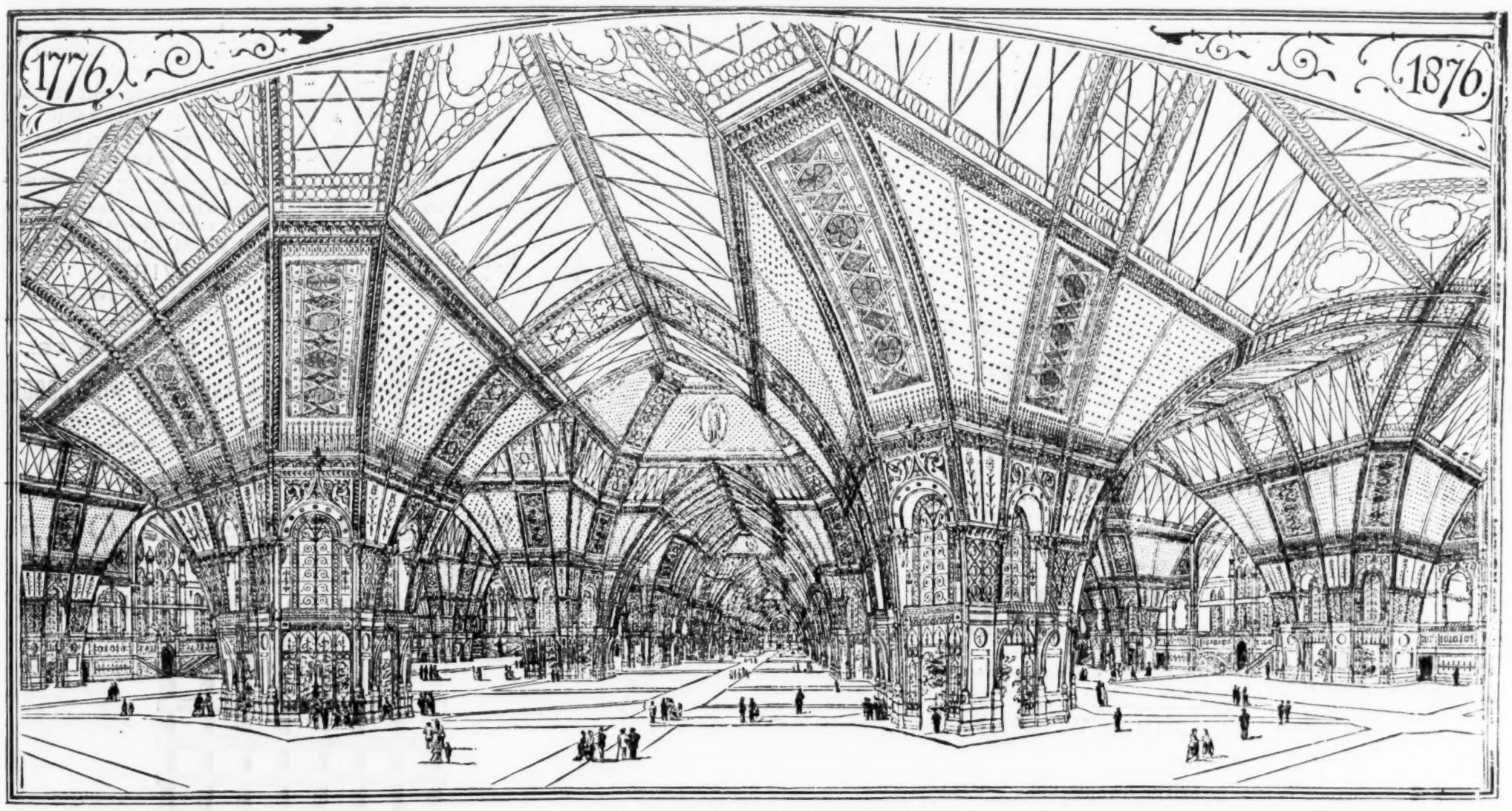

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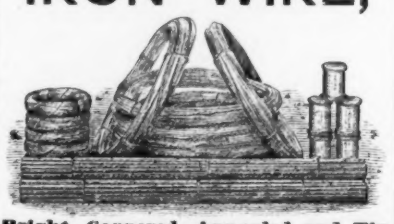

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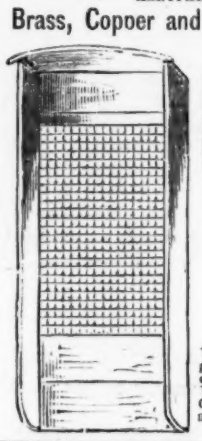

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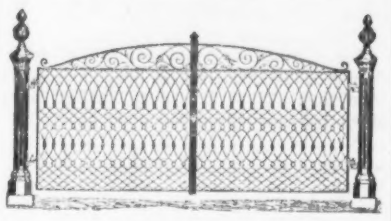

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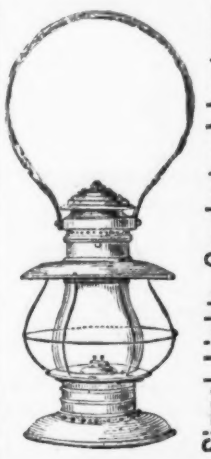

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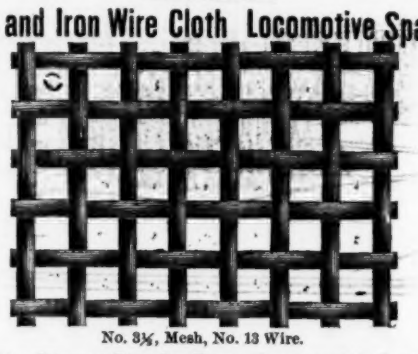

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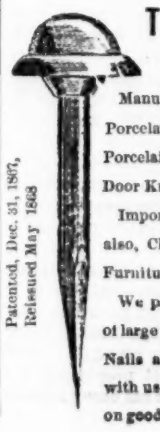

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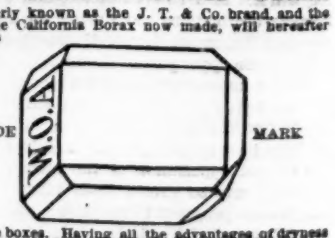

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The Working Classes of Europe.

THOMAS HUGHES ESQ., M. P., Q. C.

(Concluded.)

II. It is time to turn from this picture of the combined efforts of the working classes for their social elevation in Great Britain to the form taken by the same tendency in Germany—the people's banks, founded in that country at the suggestion, and under the supervision of Mr. Schultze Delitzsch. The present conditions of labor in Germany are very different from those prevalent in Great Britain. In place of the immense establishment, where hundreds of "hands" are employed under the control and for the pecuniary benefit of one gigantic "head," we find, for the most part, a mass of little proprietors, dispersed through a multitude of small towns or villages, working with their own hands upon their own account, with the aid of a few assistants or apprentices, and working under the disadvantage, that their limited means did not allow them to obtain either the materials required in the exercise of their industry, or the capital needed to make it productive, on terms at the command of their wealthier competitors. But what was impossible for the individual, might, thought Mr. Delitzsch, be easy for bodies of these same individuals, combining to offer the security of their collective responsibility.

Out of this idea arose the People's Banks; at first in the form of associations of persons carrying on particular trades, to buy on their joint account the materials which they respectively wanted; but soon taking the shape of institutions by which, to borrow Mr. Schultze Delitzsch's words,*

"Capital could be created for the classes without capital, and the merely passive saving and depositing in public savings banks, give place to the active participtipn in a bank business established to supply the credit wants of its members; who by fulfilling, under difficulties and deprivations, the engagements they had undertaken toward the societies, could prove their own moral worth; while by the accumulation of small savings they succeeded in adding power of credit to worthiness."

The success of the banks appear to have been materially aided by the confidence created from the unlimited responsibility of their shareholders, a principle to which Mr. Schultze Delitzsch attaches an importance greater, in our judgment, than really belongs to it, but which no doubt filled a useful office in the introduction of these institutions into Germany. The true secret of their prosperity is, we believe, to be found in their local character.

The "People's Banks" were not gigantic speculations, carried on from a distant center, which sought to draw the business of whole provinces into the circle of its operations, but associations dealing with those of whose character and position they were generally well aware, formed of persons who possessed a local knowledge of each other's means, and limited in their operations to advances needed for carrying on the ordinary business of the district where they arose. Hence they made few losses, and from this circumstance, combined with the prudence shown in their conduct—very much we believe, through the watchful care of Mr. Schultze Delitzsch, he having induced the members "to maintain the relation of the deposited reserves and accumulated business dividends to the capital borrowed, for the purpose of strengthening their business funds, at an average even beyond that prescribed by the experience of solid banks of deposit—they have gained a strong hold on the public confidence, so that the offer of capital has exceeded their actual wants, and in some cases disposed them to embark in business operations which more properly belonged to the practice of larger banking concerns—a tendency which Mr. Schultze Delitzsch states that he never failed to oppose."

Hitherto, however, no harm appears to have come to the Associations from this tendency. The facts and figures following will give an idea of the magnitude which the system, introduced in 1853, has attained, and its influence upon the growth of other forms of co-operative associations now springing up around it. The war of 1870 taxed their resources severely.†

"Thousands of co-operators," says Professor Pfeiffer, "were called to join the army, were obliged to leave house and business for many months, and instead of gaining money, were forced to spend their savings; while the productive societies could not sell any more, and orders given before were withdrawn, and payments did not come in; the money deposited in the banks and stores was withdrawn, and they could not even, with many members who entered the army, insist on the usual notice being given before the withdrawal of money; and this, although they wanted above all to be just to their creditors, yet in the midst of this storm the 'People's Banks' held their way."

Aided, no doubt, by the rapid and decided success of the German armies, they survived the panic attending the first few weeks.

"Business," says the Professor, "which had never been entirely suspended, was soon resumed to the same extent as before, the demands of the army probably in a great measure supplying, under another form, the orders it had at first taken away; the banks and stores were able to supply with money their members in the field, and their families, and in the midst of the distractions of the war these members increased, 121 new co-operative banks and 112 stores having been opened, and nine manufacturing societies established."

Institutions which could thus stand the "tug of war" must naturally be expected to thrive still more under the reviving influence of peace. Accordingly the last report of Mr. Schultze Delitzsch shows the following increase in their members, and the business done by them:

	End of 1870.	End of 1871.
Credit banks.....	1,571	2,059
Trade associations..	276	404
Distributive stores.....	739	827
	2,586	3,290

Mr. Delitzsch adds that at the date of his report the numbers have risen to nearly 3500, and from the returns received at the Central Office (which, however, were only full in all respects as to 942 associations) he gives the following estimate:

	Thalers.	£ Sterling.
Total business	400,000,000	60,000,000
Cash credits.....	380,000,000	57,000,000
Capital belonging to members	32,000,000	4,300,000
Loan Capital.....	85,000,000	12,750,000

The total number of members he estimates in like manner at 1,200,000.

Such, in brief outline, has been the operation of the two principal forms of that ladder of systematic association for production and distribution, up which the working classes of Europe are now striving to climb out of the mire where the iron tramp of capital, competing for profits at their cost, has trodden them down, to that happier stage of existence where this keen competition for profit shall be transformed into a generous emulation for excellence; and the producer shall shake hands in friendly union with the capitalists, in whose ranks he will be included.

The two forms of associations remaining to be noticed are, to a certain extent, anticipations of the flowers and fruits by which this stage of existence will be cheered and adorned. They are instances of the spirit of union directed, either to create common meeting places for bodily recreation or intellectual enjoyment among the working classes, or to import into their houses those appliances for promoting health and comfort which the richer classes have long since learned to consider necessaries of life in their own homes.

III. "The Workingmen's Club and Institute Union" has been the practical answer given in Great Britain, to a question which a few years since began to be seriously asked by those social reformers who have striven to help the working classess to help themselves, namely: why should not the workingmen form on a scale suited to their means, clubs for social purposes, similar to those which we, with our larger means, are accustomed to form for ourselves? why should they be driven to seek, in shops whose proprietors live by tempting them to drink, the only public place where they can meet under shelter to enjoy each other's society? When the tavern was the habitual resort of British gentlemen, they, we know, were noted for habitual excess in drinking. With the introduction of club life, this habit has almost disappeared. Will not similar results follow if similar facilities for obtaining social recreation apart from the civilities of "mine host," are opened to the working classes? And will not these centers of recreative union, supported as they will naturally be, by the most thoughtful and best conducted men among these classes, insensibly exercise through their influence and elevating action, spreading itself among the whole body, and thus preparing the way for that higher state of social existence to which we hope to see them raise themselves? Such appears to have been the idea out of which the institution above mentioned arose; and though never in the receipt of large funds, it has succeeded in calling forth or encouraging among the working classes the disposition to establish them to such an extent, that there are now known to the central association 535 workingmen's clubs in the United Kingdom, estimated to number 90,000 members,* and supported mainly, in many cases entirely, either by the subscriptions of these members, or by the profits arising from their use of bagatelle or billiard tables or the sale of refreshments to them. It is the self-managing character accompanying this power of self-support, as much as their social objects, which gives to these institutions in our view, their true importance. Help yourselves and God will help you, is a maxim, profoundly true, though sometimes perverted into an implied doubt of that divine help of which it really states only the beneficent condition. Hitherto the mutual help which the working classes have been inclined to give to each other has been confined, either to an imperfect application of the principles of life assurance to create common funds for their individual support in sickness or old age; or to the formation of leagues against their employers, for obtaining higher wages or shorter hours of labor, by stopping the work out of which profits and wages alike are derived—that internal *gouvernement de combat*, where the individual gives himself up into the hands of selected leaders to gain strength by the surrender of liberty, of which, as of military institutions generally, the philanthropist must say, they may be a necessary preservative against worse evils, but it is an evil necessity which makes them necessary. It is the great sign of hopefulness in the present age, that the vast army of those who live by manual labor, who have hitherto combined only to avert general injury by individual sacrifice, should begin to unite for the higher end of securing individual good by general co-operative action.

IV. It is as another phase of this life bringing principle that we have noticed the "Artisans' and Laborers' Dwelling Company;" because it is, we believe, the first considerable attempt by working people to meet one of the most crying wants of the present day in those overcrowded cities into which the pressure of competition continually drives the larger proportion of the population—the want of healthy and pleasant dwellings for the poorer classes. Societies for improving the dwellings of the workers have existed for the last quarter of a century in Great Britain; where the "Metropolitan Dwelling Association" set an example, followed with greater commercial success by a company founded by Sir Sydney Waterlow, at the moment when we write, Lord Mayor of London, and by other smaller associations. But these societies have been the offspring of the benevolence of the rich, not of self supplying union among the poor. Individuals, such as the late Mr. Peabody, and the Baroness Burdett-Coutts, have made magnificent donations for the same object; but their operation has been limited to the funds thus nobly provided. They have not called forth, among the class for whom these benefits were designed, any response beyond that of letting themselves be benefited. Cottages have, indeed, been built, in some cases, by the great co-operative societies of the North, for their own members; and the disposition to employ their accumulating funds in this way appears, we are happy to say, to be growing. But this "Artisans' Dwelling Company" has brought forward a scheme for supplying dwellings which seems to be now attracting extensive support from the classes who are to live in them, and, therefore, to be more competent than any of its precursors to contend with that gigantic evil which makes the back lanes and courts of our cities a standing reproach to the self-praised civilization surrounding them. The secret of this greater interest lies, we believe, in the fact that, by the new scheme, the worker can become the *owner* of his own separate dwelling, instead of merely the occupier of rooms let to him, in a block belonging to a company. The societies or individuals mentioned above have striven to bring their buildings to the artisans, and thus were compelled, by the high price of land in the great hives of modern industry, to gain in hight the space which they could not afford to use in breadth, and merge the proprietor in the lessee. "The Artisans' and Laborers' Dwelling Company," on the contrary, seek to bring the artisans to the dwellings, which they construct in the neighborhood of the great hives, instead of in their interior, availing themselves of the facilities for locomotion offered by railways and street cars to transport the worker to his work. Naturally, this involves some additional cost; but it is a cost compensated by the greater cheapness of his house, the diminution in doctors' bills, and the stoppage of the drain of the public house, produced by the healthier atmosphere in which he and his family live, and the absence of the ever ready temptation offered by the drink shop "round the corner" to spend in his gullet what should be spent on the backs or the brains of his children, or on the comforts of his home. Buildings for the common benefit of the dwellers in these *cites ouvrieres* are part of the plan, and the time will probably come when the superior facilities of access to these common advantages, afforded by well arranged dwellings united under one roof, may induce the classes who are to benefit by them to prefer such domestic clubs, jointly managed by their owners and occupiers, to separate houses. But, till this time arrives, the "Artisans' and Laborers' Dwelling Company" must be congratulated in having set on foot a system which the workers appear inclined to use to solve for themselves that problem of decent and healthy homes, with which the selfish interests of the wealthier classes will not meddle, and which their benevolence has hitherto proved quite inadequate to effectually supply.

We have no space left to dwell on the prospects which are thus opening in the old countries of Europe for the poor. The time has come when the fact that they have attained their majority is too clear for argument, and the question which is being anxiously asked on all sides is how they are likely to use their power in the national households of which they have become, or are fast becoming, the strongest members. Those who have watched them most carefully and sympathetically will have little fear in the development of the great drama. It would be vain, nevertheless, to deny that there is much cause for anxiety. The evil spirits of irreligion and communism which have here and there obtained a strong hold on the class that is rising to power, are hard to cast out. But in England, at any rate, the perilous time has passed. It is impossible to watch the tone of the numerous congresses and other gatherings which are held in all parts of the country and not to feel that the jealousy of capital, which still exists, has no dangerous side to it. Indeed, the danger is rather the other way, and in the co-operative producing societies especially, the best men have to watch carefully in order to ensure that workmen, who are not also shareholders, shall get any portion of the profits resulting from associations. In Germany, where communistic doctrines had till lately, and probably still have, a far stronger hold on the artisan class than they have ever had in England, the same healthy influence is at work. One of the ablest of the liberals in the German Parliament, in writing a few weeks since to an English co-operator, stated his own firm belief that if his country be saved from a communistic revolution, as he believed it may be, it would be owing chiefly to the influence of the people's banks and working associations.

The effect of the movement on religion is a deeply interesting study. A large section of the English co operators openly profess that their object and hope are to make trade Christian, "to apply in common life, in buying and selling, producing and consuming, the old truths which have commanded the lip service of Christendom for near 2000 years." We incline to think that their numbers and influence are on the increase; and it is difficult, in any case, to see how a great popular movement which takes for its motto "self-help through fellowship in work," can fail to strengthen the religious life of a people. But without insisting on this point, we are quite content to put the case no higher than Mr. Mitchell has done, and to let it rest on his words. Writing of the co-operative movement before it reached anything like its present development, he says:

"It is a change in society which will combine the freedom and independence of the individual with the moral, intellectual, and economical advantage of aggregate production; which without violence or spoliation, or any sudden disturbance of existing habits, or expectations, will realize, at all events, in the industrial department, the best aspirations of the democratic spirit."

It is the most beneficial ordering of industrial efforts for the universal good which it is at present possible to devise.

* Letter to R. Kettle, Esq., Co-op. Congress Report for 1872, page 115.
†Co-op. Congress Report for 1872, page 101.

* Seventy-four new clubs were formed during the last year; but, on the other hand, forty-six had been closed.

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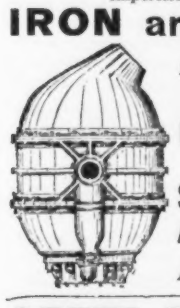
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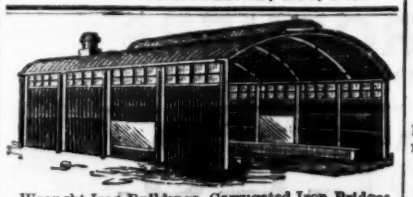
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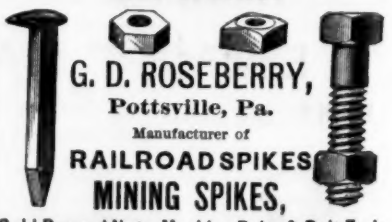
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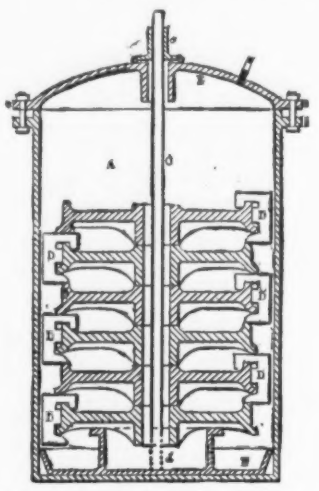
New Patents.

We take from the records of the patent office at Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN APPARATUS FOR TEMPERING AND ANNEALING CAR WHEELS.

Specification forming part of Letters Patent 147,566, dated February 17, 1874, issued to John Matthews, of Baltimore, Maryland:

To prevent deterioration in the strength of cast wheels from unequal cooling, and consequent unequal shrinkage, annealing or tempering of the entire wheel has been resorted to as a means of equalizing the tension of all the parts. The form of the wheel is necessarily such that the central portion, or disk, having (compared with the rim) the smaller area of section, cools first, and in so doing the particles of the rim and central portion are liable to be separated or dragged apart, causing an incipient fracture at their line of juncture. The same may be said with reference to the said central portion of the wheel and the hub. The



IMPROVED APPARATUS FOR TEMPERING AND ANNEALING CAR WHEELS.

effect of this unequal shrinkage of the casting, consequent upon the unequal area of section of the different members of the wheel, is to greatly impair its inherent strength. The rim and the lines of juncture of the different members of the wheel are caused to become brittle from the stretching and dislocation of the particles, and, therefore, liable to sudden fracture from various and commonly occurring causes.

This invention relates to that class of pits in which the wheels are placed one upon the other, and from which pits vent is given to the heat and gases cooled from the mass of incandescent metal composing the wheels in the pit. It consists, first, in a removable false bottom placed at the bed of the pit, which bottom is designed to receive the sand and scale falling from the wheels.

It consists, secondly, in a straight, vertical, and removable or adjustable pipe, adapted, in the manner hereinafter described, as a vent through which the heat and gases escape from the pit.

Efforts have been made to anneal and temper car wheels in pits in which the heat and gases are not allowed to ascend immediately through the pit, but compelled first to seek the bottom of the pit, and then ascend through a vertical pipe, necessarily having an elbow or horizontal branch connecting with the pit.

While it is here unnecessary to inquire into the respective merits of pits having a lower vent and those having an upper one, it is evident that much inconvenience must arise from the use of a lower vent pipe, since it must, to be vertical, have a bend or elbow leading to and connecting with the pit, for the sand and scale from the wheels will soon find their way into the elbow and choke up the vent, either entirely or to such an extent as to render the pipe almost useless for the purpose for which it is designed. The pipe to be cleaned of its obstructions must be first removed from the pit, and then subjected to a shaking or the insertion of some cleaning instrument, or be blown through. For, if an attempt be made to clean the pipe by any of these means while connected with the pit, the result is only to cause a removal of the dust, &c., from the vertical to the horizontal portion of the pipe. These inconveniences are obviated by the use of the vent pipe hereinafter fully described.

The invention consists, thirdly, in a clamp, three or more of which are fitted to the rims of the wheels before they are lowered into the pit, the said clamps fitting sufficiently near to the inner diameter of the pit to enable the wheels to rest upon each other, thus preventing their liability, when in the heated condition in which they are lowered into the pit, to change from or be subjected to any undue or uneven strain to which they might be exposed were they not placed in the pit in such regular and even order.

The drawing is a vertical section of an annealing or tempering pit with improvements.

A represents the pit, made of chilled or white iron, having a uniform thickness of about one and one-half inch, a depth of about 6 feet, and a diameter of about 3 feet. The pit may be portable or stationary, but is preferably portable, and placed above ground in convenient proximity to the apparatus used for lowering and hoisting the wheels into and from the pit. B is the false bottom. The lowest wheel rests upon a ring cast upon the upper face of the false bottom. C is the escape pipe, also resting upon the false bottom, and is perforated at its lower end, to allow the passage of the gases. D D are the clamps, three or more of which are attached to each wheel, to guide it to, and maintain it in, its proper position. The pit is closed at its upper end by a cover, E, of concavo-convex form, and held down by bolts, which connect the lugs *a* with the corresponding lugs *b* on the pit. The concavo-convex formation of the cover E tends to prevent its becoming warped or injured. As the aperture in the cover is large enough to allow of pipe of a greater diameter than that shown being used, the space around the pipe is closed by means of the bonnet *c*, which is formed to fit the pipe closely.

Claim—1. The removable false bottom adapted to the pit.

2. The straight, vertical and adjustable escape pipe, C, placed centrally of the pit and cover, E, the lower end of the said pipe having perforations.

3. The guiding clamps, D.

IMPROVEMENT IN FURNACES FOR THE MANUFACTURE OF IRON AND STEEL.

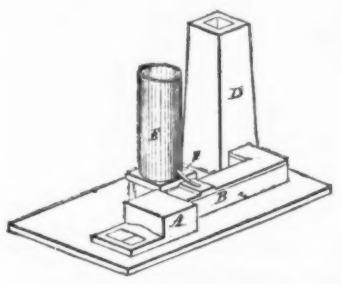
Specification forming part of Letters Patent No. 147,456, dated February 10, 1874, issued to Elonzo S. Wheeler, of Westport, Conn.

Figure 1 is a perspective view, and Fig. 2 a longitudinal section through the air blast.

This invention relates to an improvement in that class of furnaces known as "air blast furnaces," and such as are commonly used in the manufacture of malleable iron, the object being to refine the iron to a greater extent; and the invention consists in passing the iron, after it is melted, through the air blast, over a succession of falls, so that the blast is driven through or in contact with the flowing metal as it passes through the blast to the draw-off.

A is the furnace or fire box; B, the chamber; C, the flue, and D the chimney, in construction substantially the same as in air blast furnaces. E is a cupola or furnace, of similar construction, in which the pig iron or ore is melted. This is arranged in convenient proximity to the chamber B, so that a duct, F, will lead from the furnace E directly into the furnace B at or near the top, and between the fire box A and the

fig 1

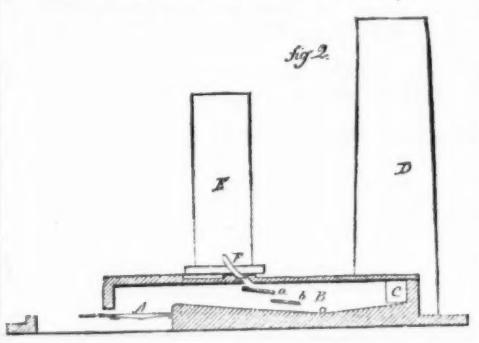


IMPROVED AIR BLAST FURNACE.

lowest point of the furnace B, that the metal which is melted in the furnace E may flow directly into the air blast furnace B, and there be struck by the blast from the furnace A, heated to a still greater extent, and thereby refined.

In order to give the metal more contact with the fire than it would have if it fell directly upon the bottom of the furnace, plates *a b*, more or less in number, are arranged, inclining downward, one forward of the other, the first so that the metal will fall upon the upper surface, flow over that surface, and fall onto the next, and so on till it reaches the bottom, the blast passing between and over the plates.

fig 2.



Claim—The combination of a melting and an air blast furnace, when the said air blast furnace is provided with a succession of plates, *a b*, arranged so that the metal from the melting furnace will flow into the air blast furnace over the said plates, and be brought into contact with the blast of that furnace, substantially as described.

IMPROVEMENT IN APPARATUS FOR UTILIZING WASTE GASES IN METALLURGIC FURNACES.

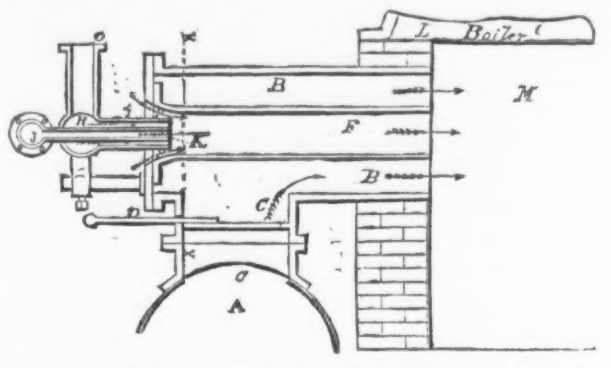
Specification forming part of Letters Patent No. 147,455, dated February 10, 1874, issued to Peter L. Weimer, of Lebanon, Pennsylvania.

In the operation of iron smelting furnaces, the waste gases that were formerly allowed to escape at the tunnel head have for some time been utilized, both for heating the blast and for generating steam. In modern well regulated furnaces, the gases are burned in the hot oven and under the boilers, by means of a burner or jet. This burner or jet consists of a large tube, either round or oval, through which the gases pass. In the center of this tube a series of smaller air tubes are placed. The discharge ends of the air tubes terminate at the mouth of the larger gas tube. The current of gases passing through the larger tube meets the current of atmospheric air coming through the air tubes at their mouth, when ignition and combustion take place.

The nature of this invention consists in apparatus for projecting into the mass of burning gases at the mouth of the burner a volume of atmospheric air mingled or saturated with water in the form of fine spray. The air, being under a pressure of several pounds to the square inch, is projected with considerable velocity, carrying the fine water spray with it into the midst of the burning gases, in this manner supplying them with a large volume of oxygen, and greatly stimulating their combustion.

Figure 1 is a side sectional view of a burner as arranged to use this invention. Fig. 2 is a sectional plan of Fig. 1 on the line Y Y.

A is the gas flue or conduit that carries the waste gases from the tunnel-head of the furnace to the gas burner B. This burner B is an oval-shaped tube or cylinder, the waste gases entering it through the opening C, the flow being regulated by the sliding damper or valve D. The gases, taking the direction of the arrows, escape at the mouth of the burner B, at E. F F are a series of air tubes, passing through the body of the burner B, for conveying the necessary atmospheric air to the mouth of the burner, to ignite the gases. H is an air pipe, placed transversely to the air pipes F, and in front of the burner. Nozzles I, I, I, project from the pipe H into the bell end of the air tubes F, F, F. A smaller traverse water pipe, J, is placed out side of the air pipe H, and has a series of nozzles, K, running through the body of H into the center of the air nozzles I, and terminating in a line with them. Cocks or valves (not shown in the drawing) control the flow of both air and water. L represents a boiler, and M the boiler furnace, where the waste gases are consumed and utilized for generating steam.



IMPROVED APPARATUS FOR UTILIZING WASTE GASES IN METALLURGIC FURNACES.—*Fig.* 1.

The operation of the invention is as follows: The waste gases in the furnace from the gas flue A will not ignite until brought into contact with atmospheric air. The valve D being opened, a flow of gas enters the burners B and escapes into the boiler furnace M. At the mouth of the burner at E it comes into contact with the inflowing current of atmospheric air delivered by the air tubes F, F, F, and is ignited, filling the boiler furnace M with a large volume of flame. The combustion, however, is not as perfect as is desired, a large part of the gases passing away unconsumed, for want of a sufficient supply of oxygen. To meet this want, the air jet H, with the nozzles I, I, I, introduce atmospheric air under a pressure into H, at the branch O. This air escapes with considerable velocity through the nozzles I, I, I, into the air tubes F, F, F. The velocity of the discharging air at I carries with it, through the tubes F, F, F, a large volume of air, entering at the annular spaces P, P, P, thus delivering at the mouth of the burner B a much greater volume of air than that merely escaping from the nozzles I, I, I. By this means, the quantity of air under pressure is economized, and a better distribution of all the air among the gases is attained.

If the air projected into the gases is saturated or mixed with water in the form of a fine spray, the combustion of the gases is greatly stimulated, and a much more intense heat is produced. To accomplish this object, the water pipe J is placed in the rear of the air pipe H. Water on being let into this pipe escapes at the nozzles K, K, K, into the very center of the air jet, escaping from the air nozzles I, I, I, and is blown with it in the form of fine spray into the ignited gases in the boiler furnace M, resulting in greatly augmenting the heat, due to the very thorough mixing of the necessary oxygen supplied by the air and water with the consuming gases.

Claim.—1. The combination of the air injecting pipe I, I, nozzles I, I, I, water pipe J, and nozzles K, K, K.

2. The combination of the air injector H and

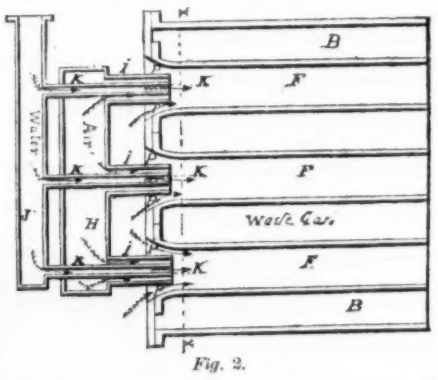


Fig. 2.

nozzles I, I, with the gas burner B provided with tubes F F, into the front end of which the nozzles I I project.

3. The gas burner B and tubes F, in combination with the air injection pipe H, nozzles I, I, I, water pipe J, and water nozzles K, K, K.

A Valparaiso correspondent of the New York *Bulletin* calls the attention of our business men and manufacturers to the importance of being suitably represented at the Chilian exhibition, to be held at Santiago in 1875, and to the efforts now making by European countries to contend with us in those markets. Fourteen Spanish-speaking republics will be represented, and they expect the United States to do their duty, and prevent the Europeans from outstripping the New World at this great show. The matter is one of considerable importance. Without an exception the republics of Latin America have been doing well of late years. After getting exorbitant prices for their cotton while our war lasted, they have seen nearly every article produced by them rise to a comparatively high figure, more especially copper, hides, coffee, India rubber and the minor drugs. European countries are making greater efforts than ever to dispute with us the Spanish American markets; steamship line upon steamship line is established, in addition to the existing ones both from England and the Continent, and unless we make a creditable display at the exhibition they will probably put us down as indifferent to a valuable trade.

Technical Schools.

A writer in the Philadelphia *Ledger* says: Technical education, like the general education of all classes in public schools, has grown out of the necessities of men and nations. Political freedom and public education have been mutually developed. With every advance of political freedom there has been a corresponding extension of the means of education to the newly enfranchised classes; with every such extension political freedom has been more and more assured, and the necessity made greater for its further advance. Thus, also, technical education—the teaching of industrial arts and sciences to those who, in their daily labors, most need the theoretical knowledge which such education can alone give, has expanded with the growth of industry and of those means of rapid intercommunication between distant sections of the world which has broken down natural barriers and made all the world kin. Fifty years ago Switzerland could maintain her prosperity without the aid of technical education, notwithstanding her poverty in mineral resources and her remoteness from the pathways of commerce. Holland, although behind other nations in the amount of her raw materials, could also, when favorably situated with respect to a market, escape destructive competition with more distant nations. But the telegraph, the railroad and the steamship have, in a measure, put all countries on a commercial equality. Relative position with respect to a market is not as important a factor now in determining the course of trade as it was fifty years ago. The two important elements are skill and natural resources. The one cannot be materially increased, although science aids the necessitous nation by discovering new resources or better methods of utilizing those already known; but the skill of the workers can be improved, and by relatively great improvement it can be made to overcome the disadvantage of poverty in resources. The necessity for such improvement has developed technical education in Switzerland and Holland to a remarkable extent, and technical education has worked out the expected results by giving to those nations a prosperity which their geographical position and natural advantages (or disadvantages) would alone deny them.

Great Britain is also beginning to feel the importance of technical education in the maintenance of her commercial supremacy against the equalizing effects of the building of railroads and steamships. In all parts of the United Kingdom liberal provision has been made for the higher education of the working people. In this country geographical position and natural resources have alike prevented us from feeling the necessity for technical education in the sense that Switzerland and Holland have felt that necessity; but the importance of such education, and the knowledge that some day a higher education in industrial arts will be one of the most essential conditions for national prosperity, have already led to a great development of the means for such instruction. In our own city we have night schools for artisans, beside the Franklin Institute and technical schools under private control. Massachusetts has established art schools similar to those of England, and in many States, including our own, colleges have been founded for the express purpose of educating young men in industrial arts and sciences, and departments have been added to the old classical colleges for the same purpose.

Systems of education grow with the growth of nations and fit themselves to the conditions and necessities of the times which give them birth. That which was fitted to the wants and understandings of man fifty years ago is an ill-fitting garb to-day, and that which to-day is developing the young minds of all the States will, when they have been matured, give way to one fitted to the new and greater wants of another generation. In all these advances we more nearly approach the perfect science of education—and the systematic arrangement of all the truths of education according to their mutual relations—upon which the perfect system will be built. To-day we have not all these truths, nor do we clearly comprehend their mutual relations. But we have such knowledge of them as growing wants have shown us, and upon that knowledge we have founded a system which, though it may be imperfect, is best fitted to meet present exigencies and to accomplish present purposes.

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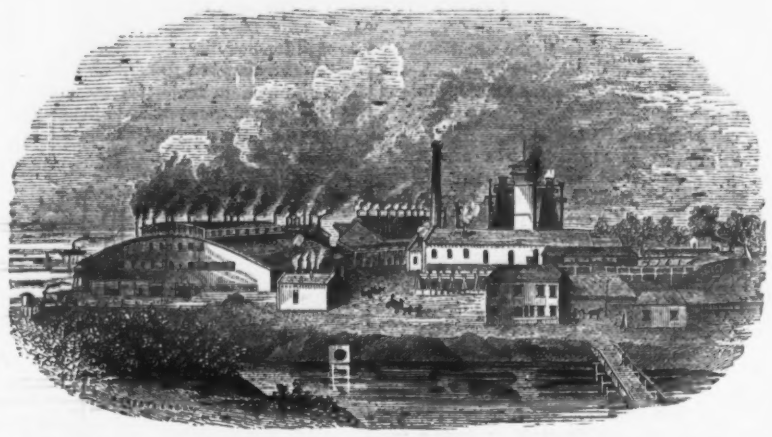

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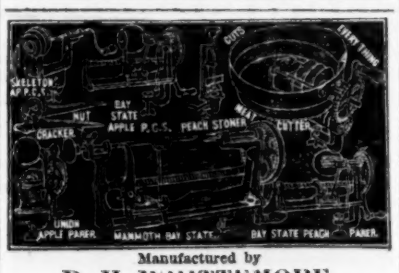

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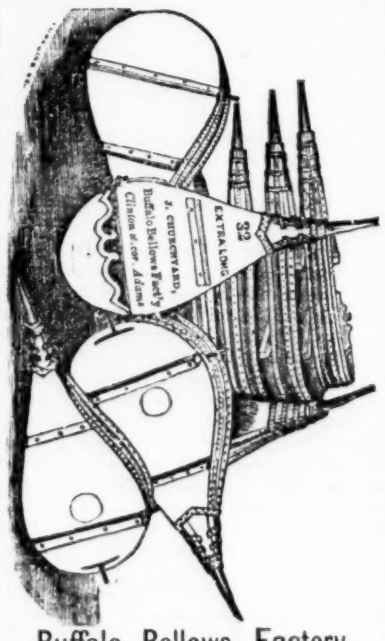

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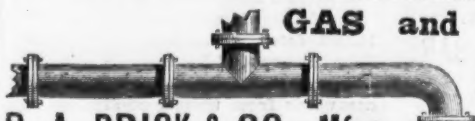

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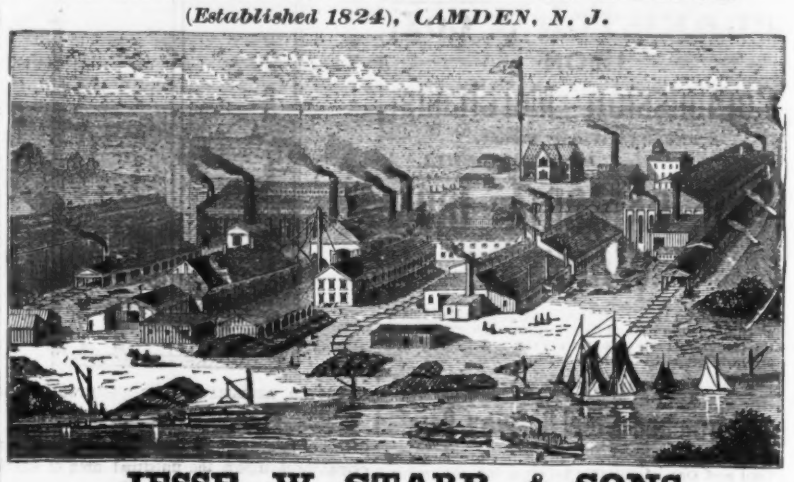

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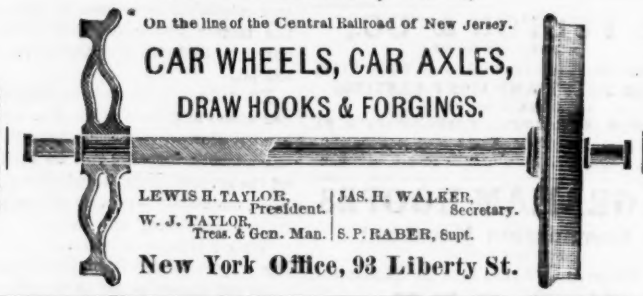

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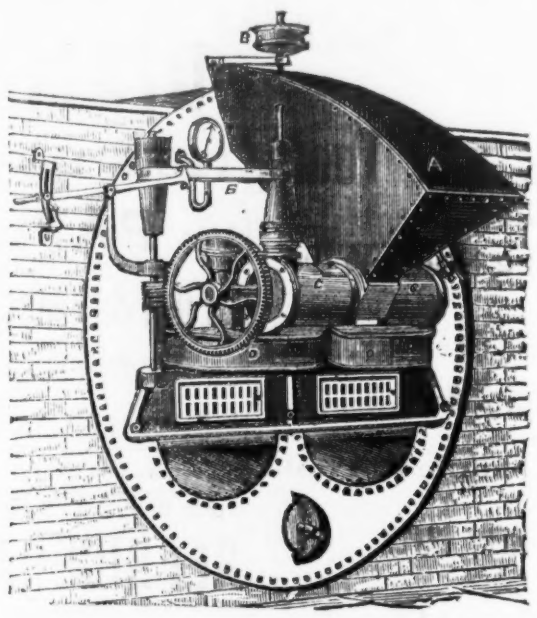
Smith's Mechanical Stoker.

The accompanying illustration represents an apparatus for feeding furnace fires which is certainly simple in construction, and which is said, upon high authority, to be a practical and economical device. It consists of a hopper, a worm and a pair of toothed wheels. At the bottom of the hopper is placed a cast iron screw, with a tapering helix of smaller diameter, but increasing gradually up to the internal diameter of its containing cylinder. The two halves of this screw are right and left handed, respectively. It has a slow revolving motion, and conveys the coals from the hopper to opposite the center of each flue, and at the same time breaks up any lumps of coal by a sort of nibbling process, though the one great advantage of this stoker is that common slack is better adapted for firing with it than the best coal, as the latter becomes reduced to the size of slack before passing on to the fire. Opposite each flue are placed two horizontal disks, about 12 in. in diameter, with radiating arms cast on the upper surface. These disks are placed with their peripheries almost touching, and revolve in opposite directions. The fuel is dropped from the screws exactly between the disks, and by their revolutions is thrown into the furnace. The following reference to our illustration will make the action of this stoker quite clear: A, hopper to receive the fuel; B, shaft driven by strap; C C, cylinder containing right and left hand screw; D D, cases containing each two revolving disks; E, cones and straps for regulating speed of disks. Deflectors



SMITH'S MECHANICAL STOKER.

are provided in each furnace to direct the fuel to either side, as may be required. The furnaces are fitted with a simple arrangement of rocking bars, which enables the fireman to keep his fires clean with very little trouble. The doors are constructed so as to admit the proper quantity of air in a finely divided state, and these doors hardly ever require to be opened. Altogether, this stoker possesses many advantages, among which may be named its simplicity, cheapness, ease with which it can be attached to existing boilers—only three bolts having to be inserted into the shell—the fact that all the parts are external to the furnace, and not liable to injury from the heat of the fire. By the constant manner in which the fuel is supplied the smoke nuisance is greatly mitigated. We are informed that a modification of this stoker is now being applied to marine purposes, and it is found that more steam can be got out of the boilers by using common slack put on the fire by the mechanical stoker than could be obtained with Welsh coal fired by hand. If this statement is correct, a new era in steam making appears to be opening.

Artificial Fuel for Smelting Iron.

The London *Mining Journal* says: For some years past Mr. D. Barker, of Northfleet, has been engaged in perfecting his processes for the conversion of small coal into useful fuel, and his last patent certainly shows satisfactory progress. His invention has for its object the treatment and utilization of coal, whether anthracite or non-bituminous, or bituminous, or lignite, peat, or other similar carbonaceous substances, when in a state of powder or fine division, so as to produce a solid and smokeless, or comparatively smokeless, fuel, especially adapted for smelting iron and other metals. The fuel manufactured under Mr. Barker's previous patents has been found incapable of bearing the great weight to which the fuel employed for blast furnace purposes is necessarily exposed, as immediately it is subjected to a great degree of heat it softens; and although it will afterward harden in the fire, and burn to a coke, yet the circumstance of its softening in the first instance is highly prejudicial, and renders it inapplicable to smelting metals. The present invention, however, obviates these objections and difficulties, by the use of a carefully chosen agglomerating material, and a special method of combining it with the fuel. When coke is in the first instance employed in manufacturing the artificial fuel, the coke, which has been prepared in the manner already well known and understood, having been reduced to a state of powder or very fine division, by any suitable means or apparatus adapted for the purpose, is mixed in a suitable pug or mixing mill, in the proportion of 1 lb. of the latter with 2 oz. of the mucilage or liquid which will presently be referred to. The mixture thus made is exposed to heat, and molded into blocks by means of any suitable apparatus adapted for the purpose. The blocks are then placed in a retort, and exposed to the influence of heat, in order to evaporate the liquid or moisture contained therein, or a sufficient part thereof, when the blocks will become perfectly solid, and fit for the purposes referred to.

When anthracite or other coal or carbonaceous matter is used it is prepared in the same way as the coke dust, and then formed into blocks and coked, or coked without any admixture of the mucilage. In either case the coke thus produced is ground or reduced to a state of dust, or powder, and is then mixed in the same proportions with the mucilage, or liquid. The mixture thus formed is made into blocks, which are placed in retorts, and exposed to heat in order to evaporate the moisture contained; this method of treatment being, in fact, equivalent to a recoking of the materials under treatment. In some cases, as, for instance, when the fuel is to be used for ordinary purposes in which great cohesion or capability of bearing a heavy burden is not required, the coal or other carbonaceous material is combined with the mucilage, or liquid, as before mentioned, and then exposed to heat and formed into blocks without being subjected to the operation of coking.

In the manufacture of the mucilage, or liquid, which Mr. Barker uses for the agglomeration, one part of farina from which the gluten has been removed, and which consists entirely, or almost entirely, of fecula, or starch, is mixed with twenty parts of water, and a solution of sulphate of alumina or of chloride of alumina in hydrochloric acid is added thereto, in the proportion of ½ oz. per gallon. Although, by preference, the farinaceous mucilage, before described, is used, any mucilage prepared by the mixture of any ordinary farinaceous substance with water may be employed; and if the solution of sulphate of alumina, or of chloride of alumina, were used alone with water it would cause the coked particles firmly to cohere, but such use would not be so advantageous as the use of the mixture, or mucilage, hereinbefore described. The mixture thus formed is conveyed into a tank heated by steam, and in which it is boiled, and then run off through a tap into a boiler, in which are placed pitch and carbolic acid, in the proportion of eight parts of the former to two of the latter. The whole contents of the boiler are subjected to the operation of boiling under moderate pressure, as well understood, by which treatment the several substances contained in the boiler are caused to unite. Steam is then turned on into the boiler, and the contents thereof forced through pipes into a tank, whence the liquid is conveyed by means of elevators to the pug, or mixing, mill, in which it is mixed in sufficient quantity with the coke or coal, which is conveyed in a powdered, broken, or disintegrated state, by a separate set of elevators into the pug, or mixing, mill or mills. This is an operation which is carried out in the ordinary way hitherto used.

The proportions of the several substances above enumerated are approximative only, as they may, and, in many instances, must, be varied according to the nature of the coal or carbonaceous material under treatment, as will be well understood, or soon ascertained from experience in the process by persons acquainted with such operations, and with the respective qualities of the coal or carbonaceous material employed. The heat employed for heating the liquid when in the tank is fire heat, and also that of steam. The elevators are cased with sheet iron and wood, and steam is introduced between them to keep the liquid from solidifying. A small furnace is placed under the pug mill, into which furnace is introduced a hot air pipe, with a steam coil around it, and by which superheated steam is introduced into the pug mill, a fan being also employed to draw in hot air.

Ramming Molds.

Mr. Leander Clark, of Newburgh, New York, says:

Having had considerable experience in the molding branch of the foundry business, I will endeavor to give your readers some information which will, if proper attention is paid to it, remove a great many of the annoyances that molders have to contend with.

As there is an endless variety of patterns from which the molds are made, it will be necessary to divide them into light and heavy work. Stove castings, as we all know, are very light. In the molding of such work, much depends upon the quality of sand used; the molder's heap should be composed of no more than one-half loam, the other half being a very open sand. This makes a good strong mixture, which will not allow the sharp corners and fine ornamental work to be washed away when the molten iron is poured into the mold. In ramming such work, the molder should be careful that the sand on top and bottom of his pattern is not rammed hard; but the sides or edges should be well rammed, in order that the casting may not strain from having a soft parting. Great care should be taken to seeing that the bottom board is well bedded on the flask, after which it should be removed and the vent wire used freely. The venting of the work is often but partially done, on account of the point of the vent wire coming into contact with the pattern; and when the iron enters the mold, it finds its way into said vents, fills them up, and thus, in a measure, prevents the escape of the gas that arises from the iron coming in contact with the charcoal, black lead, or soapstone, with which the mold has been dusted to prevent the sand from adhering to the casting. The bottom board should then be carefully replaced on the flask, and dogged down so that, in the act of turning it over, it could not move, which would cover the vents over with sand. The top part of the flask (or cope, as it is termed by tradesmen) needs the same care in ramming over the pattern as the bottom, and should be well vented. If the mold has any high projections in the cope, they should be well vented; for it is at these elevated points that a large portion of the gas accumulates and needs a quick exit, in order to make sharp corners on the casting and prevent blowing. The strainings of castings in this branch of the trade is greatly due to an insufficient amount of weight being placed on the flask, or the parts not being properly dogged together, as well as to the rapidity with which the iron is poured into the mold, together with the hight of the runner. Cutting short the supply of iron as soon as the runner is full, and a careful watching of the work to be poured, will, in most cases, remedy the trouble of the casting being thicker than the pattern.

As to the warping of the plates, much depends upon the quality of iron used and the judgment of the pattern maker. It can often be prevented in a measure by the molder, in making the runner from the round sprue no thicker than the piece to be cast; and, as soon as the metal is poured, by digging away in front of the sprue and breaking it loose from the casting. Where a flat sprue is used, this breaking off should invariably be done as soon as the runner is cool enough. It being wedge shaped, with the small end of the wedge downward, it lifts a portion of the casting in shrinking, and thus causes it to be out of shape.

In heavy work, care and judgment is needed, and it requires a man's lifetime to become proficient in. In ramming work that is to be poured on its end, having a hight of three or four feet, there is no risk in well ramming the sand, for two-thirds its hight, around the pattern; and as you near the top, ram it as you would a pattern no more than a foot in thickness. The sand in all such work should be very open or porous, in order to prevent scabbing. As there is so large a quantity of iron used, much steam and gas is generated in the mold; and as there is no other way of escape for them but through the vents, there should be no fault in this particular part of the mold. In the pouring of such work, it is best to run it from the bottom. If a runner is used, do not raise the risers to correspond in hight with the runner, as, by so doing, you increase the amount of strain on the mold; but form a little basin around the risers by ramming out the sprue holes with the finger; and on the side nearest the outer edge of the flask, form a lip for the surplus iron in the runner to run over on to the floor. When heavy work is bedded in the floor too much care cannot be taken in preventing the dampness of the ground beneath from striking through into the mold. The sand that is thrown out of the pit, if it has been of long standing, should not be used for the molding of that piece; for it is too cold and damp, and should be thrown on one side, and allowed to stand that it may dry and warm up. The two or three ladlefuls of iron that remain in the furnace after the work on the floor has been poured, can be run into pigs in this sand, which will greatly help to fit it for immediate use. In the venting of heavy work, the small vents should terminate in a number of large ones, which should have an opening on both sides of the mold; then a draft would be formed to carry off the gas which is continually forming as the workman is in the act of pouring the iron into the mold.

All men connected with this branch of the trade have heard that sharp report which immediately follows the pouring of a large piece, the same being caused by the confined gas in the lower end of a large vent, there being no draft to drive it out. Where facing is used, much more care is needed in venting. In the making of large pulleys and gear wheels, too much care cannot be taken in this particular. I hold that not so much depends upon the ramming of such work as upon the venting for the proper exit of the gas from the sand in the immediate vicinity of the mold; for if the mold has been rammed harder than there was any necessity for, and the venting has been properly looked after, there is not much danger of the casting being a poor one. Such work should invariably be run from the hub or center, with sufficient risers, arranged as above described. This branch of the trade is called green sand work, and it involves a large part of the art of ramming.—*Scientific American.*

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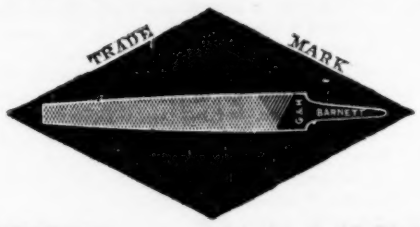

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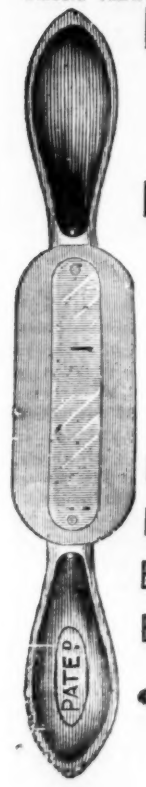

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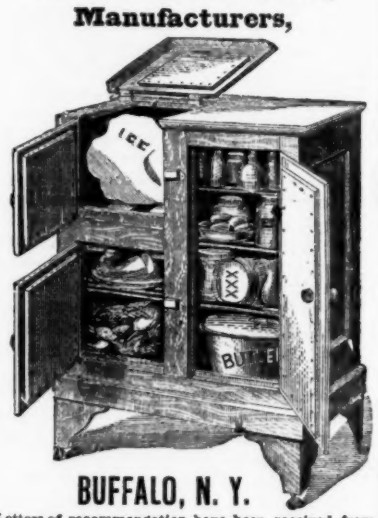

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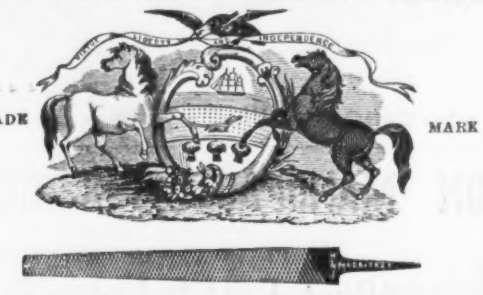

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BUSINESS ITEMS.

NEW YORK.

Messrs. J. M. Jones & Co., of Troy, have constructed the cars for the street railroads of Bombay, India, which were shipped first to Liverpool, and thence reshipped to Bombay *via* the Suez Canal. Mr. Whitman, formerly of Boston, but for some time past in charge of street railroads in Brazil, manages the Bombay roads.

At Ringgold, Schuylkill county, a new iron furnace was blown in on the 28th ult. It is said to be unexcelled by any similar establishment in the State.

The new furnace of the Clinton Iron Company, at Utica, which has only been in blast about a month, is running splendidly under the management of Mr. B. S. Platt, superintendent of the company, and is casting about 15 tons a day.

MASSACHUSETTS.

The Corrugated Iron Company, of Springfield, anticipate a busy season, having already entered into contracts amounting to over $100,000. They will also manufacture the Springfield lawn mower, which promises to be a popular implement.

The Taunton Locomotive Company have lately taken a contract to build ten 10-wheeled locomotives for the Union Pacific Railroad.

The Arcade Malleable Iron Co., of Worcester, are running on full time, with a complete force of operatives.

CONNECTICUT.

Colt's Armory, at Hartford, has received an order from the Chinese government for fifty Gatling guns, to be completed as soon as possible.

PENNSYLVANIA.

The Walton Manufacturing Company, of Erie, has in contemplation the building of an establishment at Girard for the manufacture of their patent wrench.

The Reading Railroad has now six vessels upon the stocks at Philadelphia. They are all constructing of iron. The length of each is 250 feet, with 37 feet 6 inches beam, 20 feet deep and a capacity of 1500 tons.

Clark, Reeves & Co., of Phœnixville, have an order for an iron viaduct to go to Chipachuca, Peru. It will have four spans, one 178 feet, one 105 feet and two of 30 feet each, and will be 187 feet high.

The Carlisle car shops are again in operation.

The Emaus Furnace, at Allentown, it is expected, will blow in sometime during the present month. The stack will be the largest in that section of the country, having an 18 feet bosh, and being 70 feet in hight.

The new rolling mill of Jacobs & Jackson, at Brownsville, has begun operations, manufacturing merchant bar and employing 35 men.

In the rolling mill of the Harrisburg Nail Works, located at Fairview, are nine double furnaces. The muck train is run by turbine waterwheels. The nail plate mill has three heating furnaces and 73 nail machines, the capacity being 3000 kegs per week.

Uhler's furnace, at Easton, went into blast on the 5th inst.

The engine, boiler and shaft houses of the Alaska shaft, at Mount Carmel, were burned March 15th. They were the property of the Philadelphia Coal and Iron Company, and were still in course of erection.

OHIO.

New Philadelphia starts a new foundry on April 1st.

The Girard Rolling mill has suspended operations, probably owing to the fact that the company have a large amount of muck bar on hand.

The Harris Reaper Manufacturing Company, of Janesville, have sent an agent to Germany to instruct the Teutonic farmers in the mysteries of the American harvester.

The Cherry Valley Iron Company, of Leetonia, who are successors to the Leetonia Iron and Coal Company, lighted the fire in their No. 2 furnace lately. The works have lain idle nearly two years, in consequence of the complicated state of the old company's affairs. As soon as the extensive repairs are completed, which are progressing rapidly, the whole works, including the rolling mill, will be started.

The first keg of nails made at the Ohio City Iron and Nail Works, Martin's Ferry, was turned out about two weeks ago. The factory will have 60 nail machines, and there is room for doubling this number. All sizes of spikes and nails will be made.

The rolling mill at Dover, now idle, is soon to be put in operation. It is now owned by Cleveland parties.

ILLINOIS.

One hundred thousand dollars have been subscribed to locate the new locomotive works at Rochelle.

INDIANA.

The Perkins Engine Company, Fort Wayne, was incorporated on the 4th inst., the capital stock being $20,000. The company will manufacture the Perkins engine, which has already attained a wide celebrity. The works will be under the superintendence of Mr. P. B. Perkins. The company expect to turn out from twelve to fifteen engines per month.

Arrangements are nearly completed for a co-operative rolling mill, either at Jeffersonville or New Albany.

NEBRASKA.

The infant city of Omaha has four smelting furnaces, four for lead and antimony, six separating furnaces, two capelle, two cupola and twelve retort furnaces. These smelt 20 tons of ore and separate and refine 30 tons of crude metal per day. During 1871, the shipments of silver and gold were $1,020,639·54; of lead, 4241 tons. The works did twice as much business in 1873 as in 1872, and more than twice as much in January, 1874, as in the corresponding month last year. Most of the precious ores worked are classed as "high grade," yielding from $7000 to $9000 per ton, the latter figure being produced from ore taken out of the famous Emma Mine.

Lake Superior Furnace Items.

The Marquette *Mining Journal* says: No. 1 stack of the Bay furnace, Onota, was blown out about two weeks ago, owing to a scarcity of ore. No. 2 is still in blast, and will continue blowing until the stock of ore on hand is used up. The company has now on hand about 2000 tons of metal.

The Munising furnace made 190 tons during the week ending Sunday, the 8th inst.—a little over 27 tons per day, and threatens to do better. The Champion once hoisted the broom on a weekly make of 171 tons. The last week's work at the Munising has never been excelled in this district by a furnace of the same size. The Morgan and Jackson are both larger, and they are the only ones that have made more iron. Steve Rockafellow is founder at the Munising.

The Menominee furnace went out of blast in December, and has been idle ever since. The stoppage was occasioned simply because of the want of a market for the metal, and not through any fault of the furnace. She will blow in again on the first of April, with a large stock of coal on the bank. She is supplied with twenty-seven kilns, all near the furnace, and runs exclusively upon charcoal made from soft wood and pine slabs. While in blast her largest day's make was 23 tons; largest yield for one week 147 tons. A part of the time she ran on 132 bushels of coal to the ton of iron—coal which costs on the bank eight cents per bushel. These figures would seem to show a decided saving over most of the charcoal furnaces in the district in the matter of fuel, and demonstrate to an absolute certainty the success of the experiment, if such it could be called.

No. 1 of the National furnace, Depere, has been in blast since June last, with a prospect of running a year longer. She has been doing excellent work. No. 2 was blown out in December, owing to the depressed state of the iron market, but will blow in again on the opening of navigation. The company have a very large stock of wood on hand of last year's purchase, and everything is in shape for an active campaign as soon as the market shall warrant it. Both stacks made last year 8700 tons, one of them being out of blast five months. M. R. Hunt is the general manager of the three last named furnaces.

Both stacks of the Fox River Iron Company's furnaces, at Depere, blew out in August last for repairs. No. 1 was blown in three weeks ago, and the other will follow suit in a very short time. C. H. Lovelace, superintendent.

The Green Bay furnace, which is now run under the auspices of Rhodes & Bradley, of Chicago, and which has been out of blast for a new hearth, is again blowing, and starts off well. She performed splendidly last year—in fact, has done remarkably well ever since she passed into competent hands. C. E. Sargent is the superintendent in charge.

The Iron Trade and Foreign Competition.

Messrs. Alex. Sparrow & Co., of Liverpool, write to the London *Times:* Under the influence of recent high prices, American production has doubled. France is competing with us all over Europe. Belgium is an active competitor in Canada, South America, and even in the home trade. Recently a steamship owner entered into a contract to carry 50,000 tons of Belgian iron to London. Belgian iron and manufactures of iron are being shipped direct to English and Irish ports. We have just been made acquainted with the manner in which English manufacturers propose to cope with Belgian competition. A prominent and old-established Belgian house in connection with the iron trade has sent us a letter addressed to them by an English trade association—an association of masters, not of workmen. The writer reminds our correspondents that a year ago he drew their attention to the benefits to be derived by joining the association and combining to maintain prices, and that he received for reply an assurance that the prices then fixed by the association were lower than Belgian prices. Thereupon it was not thought necessary to urge the matter further, but, as Belgian iron is now cheaper, he again urges combination. He goes on to say that the association sees with surprise and regret the prices at which our correspondents are now selling; that fixing such prices is an act uncalled for, calculated to do English makers harm and themselves no good; and he draws the inference that the gentlemen he is addressing do not estimate at their proper value the capital invested in their works or the energies required to carry on their business. He states also what is notoriously incorrect—that English makers have had sufficient orders to keep all the hands and works in full and steady employment. The proposal amounts to this—that when, as now, the cost of production is greater in England than in Belgium, the Belgian makers shall come under engagement not to sell in England below a price-list fixed by an English association; but when, as a year ago, the cost of production is greater in Belgium than in England, English makers shall determine their own prices, and Belgium shall take care of herself. When a society of English manufacturers can issue such a letter and suppose that a foreigner will not both see the absurdity of the one sided proposal and feel the impertinence of being told that a step taken in the management of his private affairs is uncalled for, &c., it seems hopeless to expect that they will recognize the true causes of the present position of our leading industry, which is rapidly declining, and will decline if these causes are not removed.

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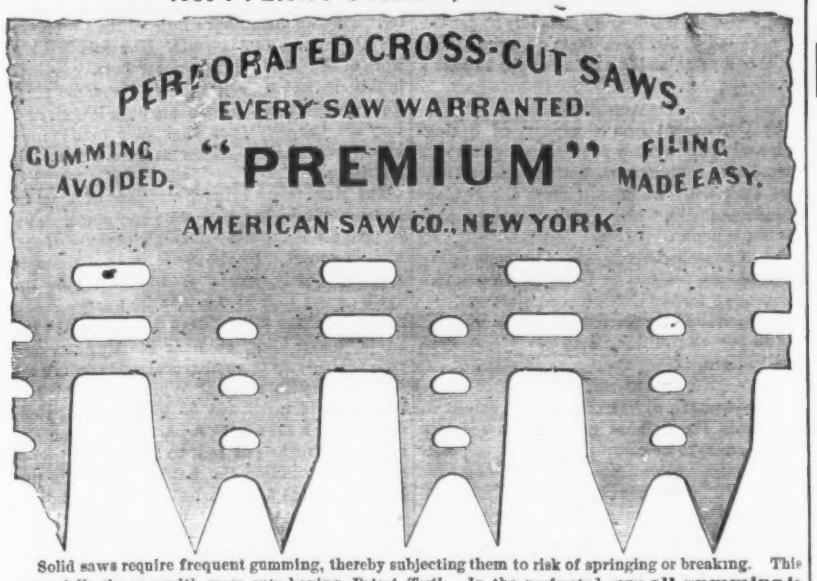

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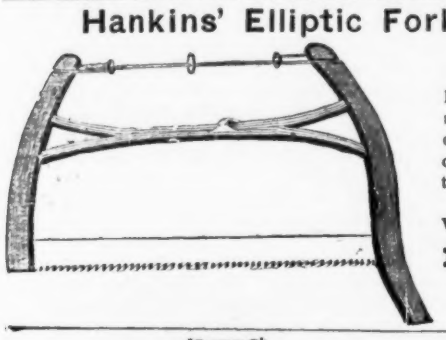

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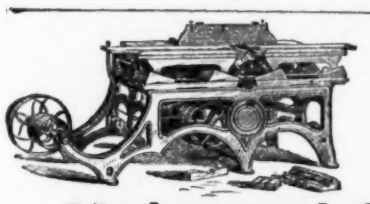

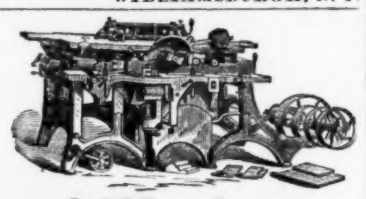

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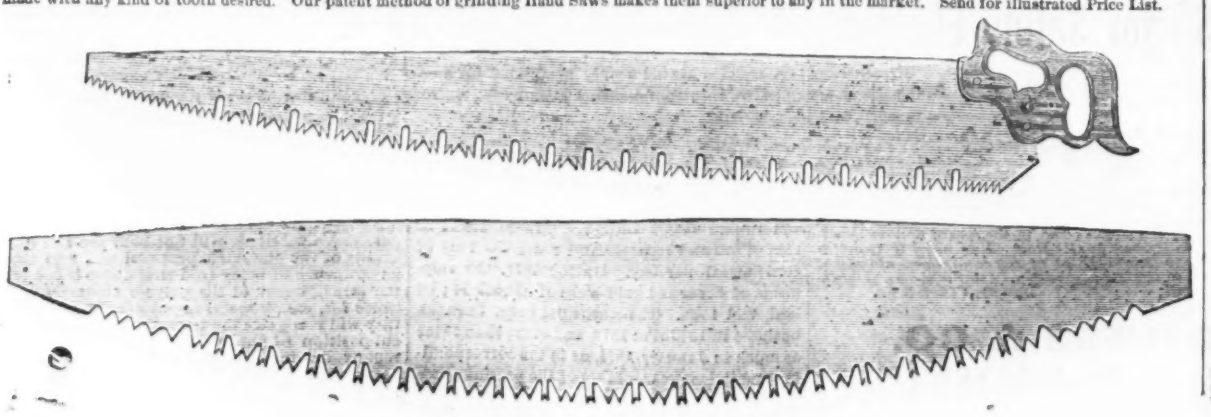

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This is produced by dressing the two points of my M tooth, to cut in line so that the outside B, C, has four times the space of the slant edge behind it, or from 1 to 5, while slant has space from 1 to 2, the inefficient slant edges are thus practically concealed and do but slight surface cutting, while B, C, edges cut and clear simultaneously.

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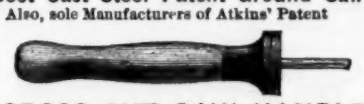

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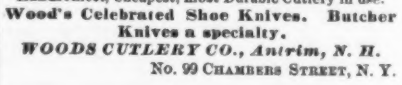

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The Coal Fields of Ohio.

Dr. T. Sterry Hunt, of Boston, writes as follows:

The State of Ohio probably ranks next to Pennsylvania as regards the extent and value of her coal and ore deposits. In the eastern and southeastern counties is found the northwestern border of the great Appalachian coal field, and this portion of it is, moreover, characterized by the presence of coals of exceptional excellence. The coal, from the lowest seam in the formation, underlying parts of Mahoning, Columbiana and some adjacent counties in the northeast part of Ohio, is known throughout the West as the Briar Hill coal, and is greatly prized, not only for all ordinary uses, but as a furnace coal for smelting iron. It is this seam of coal which has been the foundation of the great iron industry of that portion of the State. In the Mahoning Valley alone there were, in 1871, twenty-one blast furnaces, producing over 00,000 tons of iron with the aid of this coal. It may here be explained that while the bituminous coal of most other regions requires to undergo a preliminary process of coking before it is fit for the blast furnace, the Briar Hill coal, from the fact that it does not soften by heat, is used in its raw state like anthracite, and from its purity, moreover, yields, with good ores, an iron of high grade. A large part of the rich iron ore of Lake Superior is now brought to Cleveland, to be either smelted there with this coal or carried directly into the coal field itself. This coal is, beside, shipped in large quantities to Chicago, Detroit and other lake ports. The studies of Dr. Newberry in the report for 1870, and more recently those by Mr. Reid, in the final report, have added much to our knowledge of this valuable coal, and, while pointing out its probable extension beyond the limits hitherto supposed, have shown that the supply is, after all, a limited one, from the numerous interruptions, and, in some parts, from the thinness of the deposit; while to the southward it soon disappears, or at least is no longer recognized by its peculiar qualities.

Fortunately for the State, however, the geological survey has made known in the southern part the existence of a second area of free-burning or furnace coal similar to that of the north, and much exceeding it in thickness and in the facilities for mining. Little was known of this Hocking Valley or Straitsville coal field when the survey began, and it is chiefly to the researches of Prof. Andrews, to whom was committed the geology of this region, and to the chemical studies of Prof. Wormley, that we are indebted for our knowledge of this remarkable coal, to descriptions of which a large part of the two reports of progress are devoted.

The results thus made known, it may be said without exaggeration, are worth a hundredfold the whole cost of the survey up to this time. The area over which this free-burning coal, with a thickness of from six to twelve feet, has been traced, is probably no less than 300 square miles, including parts of Hocking, Perry, Vinton, and Athens counties, where it lies, for the most part, in elevated ground, intersected by valleys which expose the coal seam and offer great facilities for mining.

Within the last two or three years mining operations have been commenced in several parts of this area, and the coal is now extensively known in the markets of the West under the names of Hocking Valley, Sunday Creek, Nelsonville, Brook's and Straitsville coal. The region is now traversed by the Hocking Valley Railroad, over which 800,000 tons of this coal were last year shipped to Columbus for distribution North and West. Another railway, controlled by the Baltimore and Ohio Company, now enters this coal field from Newark, and will soon extend through it, and several other roads planned with a view to its development are in progress. The coal of this seam is well suited for a variety of purposes. As a steam coal and a gas coal it is much esteemed, and it is moreover now used as a furnace fuel in the blast furnaces of Columbus and Zanesville. I notice that a New York company is now mining this coal and bringing it to New York city, where it is sold at a high price as a superior grate coal, under the name of Straitsville cannel. Though not a true cannel coal, it resembles that in its free burning quality, and from its small amount of ash and large proportion of fixed carbon.

Labor Troubles at the Cambria Iron Works.

The Johnstown *Tribune* says: For several weeks past some of the miners in the employ of the Cambria Iron Company, who are members of a union, have been threatening to precipitate a strike. The alleged grievance of which they complain is the low rate of wages at present paid to this class of laborers, and committees have waited at various times upon the general manager to induce him to raise their compensation. We understand that these committees were received respectfully, their complaints patiently listened to, and the assurance given them in each instance that as soon as the prospects of the iron business would brighten up, their wages would be increased in proportion to the advance in that commodity.

At a meeting of the Miners' Union, held last week, the matter was freely discussed, and a cessation of work was strenuously advocated by some of the members present. No definite action was taken at that time, but it was resolved to hold another meeting the next evening, for the purpose of coming to a final decision. The call issued for this meeting was issued in hand bill form, and posted in the vicinity of the mines. It reads as follows:

MINERS TAKE NOTICE.

There will be a meeting of miners, at their hall, on Tuesday evening, March 17, 1874, at 7 o'clock p. m. A full attendance is requested, as business of importance will be transacted. Everything will go on as usual until this meeting. By order of MINERS.

Whether the covert threat of a strike was conveyed by the concluding sentence of the above, and induced the manager of the works to take decided action in the matter or not, we are not prepared to say, but yesterday morning when the puddlers went to the mill as usual to fix up their furnaces, they were informed that work had been suspended for the present. This was rather an unlooked for aspect of the situation, and it was not very long until the news was noised abroad that the iron works were to remain idle. Considerable speculation as to the reason for this naturally resulted, and the general opinion seemed to be prevalent that the threatened strike of the men engaged in the mines caused the company to take prompt action in the matter.

It is stated, by those who have good reason to know, that the Cambria Iron Company have not had an order upon their books for some time past, and that they have been keeping their mill in operation and piling up iron at a positive loss to themselves. Indeed, the great piles of iron located along the vacant ground north of Washington street, between Franklin and Market streets, would seem to give color to this statement, even if it were otherwise discredited. The wages of the miners are undoubtedly very low, but the fact of the stagnation of the iron trade throughout the country, at this particular juncture, is indentiable, and until there is an improvement it is scarcely to be expected that the former rate of wages, when the demand for iron was brisk, can be paid.

Nearly all the miners with whom we have conversed deprecate the idea of a strike, and take the common sense view that if wages are as low here the same state of affairs exist elsewhere, and as a "lock out" exists in the mining regions in nearly every portion of the State, there is no other place where they could better themselves.

Every right thinking man deprecates the state of affairs now prevailing here, and hopes that some understanding will be arrived at by which the works will speedily resume operations. If not, untold misery will follow to those who have had little enough to live on since the crisis began, and must have less now with no work at all.

Zinc and Oxide of Zinc.

As a metal, zinc was not known until comparatively recent times. Calamine, one of the ores of zinc, was used in early times to mix with copper in making brass; the ancient Greeks and Romans used it extensively for this purpose, but knew nothing of its properties as a metal.

As early, however, as 1617 zinc in a metallic form was noticed forming in small quantities as an accidental product of furnaces used for smelting the ores of other metals. It is said that the first man who intentionally made zinc from the ore was Henkel, in the year 1721. In 1742 the metal was distilled from calamine—one of the ores of zinc—by A. Von Swab, a member of the Swedish council of mines. And in 1743 the manufacture of zinc was introduced into England by Mr. John Champion, who established his works at Bristol. In 1758 Champion obtained a patent for the use of the mineral blende—another of the ores of zinc—in the manufacture of this metal.

If we have a correct history of the matter, the production of zinc in the East Indies is of older date than this. It is said that it was imported into Europe by the Dutch, and that a cargo of it was taken by them from the Portugese previous to the year 1640. It is evident, however, that but little was done in the manufacture of zinc previous to the present century except to make brass; its properties and ores beyond this were almost, if not altogether, unknown. Early in the present century, about 1805, a process was discovered by which zinc could be manufactured into wire and vessels. From this time its properties began to be recognized and its production increased.

Notwithstanding the great variety and abundance of zinc ore found in the United States, no attempt was made to manufacture it until in 1838, when, under the direction of Mr. Hassler, Mr. John Hitz was authorized to experiment on the New Jersey zinc ore for the purpose of making brass designed for the standard weights and measures ordered by Congress. But so very expensive was the process in use at that time that all attempts, further than this, to manufacture zinc in the United States were postponed for many years. But within the last few years the rapid development of the properties of this metal and the various uses to which they can be and are now applied has brought it from obscurity, and is fast placing it among the most important metals of commerce. And now, when the processes of reducing the ore are being simplified, and the cost of production very much lessened, it requires no prophetic vision to predict for it in the future a demand that will give a new and powerful impetus to the mining interests where it is found, and to the commercial interests where it is manufactured.

At the works of the Lehigh Zinc Company, of Bethlehem, Pa., the largest establishment of the kind in the United States, two very interesting processes are carried on—one, the reduction of metallic zinc, and the other the manufacture of white oxide of zinc for use as the base of zinc paints. The manufacture of metallic zinc, or spelter, is one of the most interesting and beautiful of metallurgic processes. The three kinds of zinc ore—sulphuret, carbonate and silicate—are found in the company's mines. From the two first the sulphur and carbonic acid can be expelled by roasting the ore; the silica, however, cannot be got rid of. When the ore is ready for the furnaces, the zinc in it is composed of oxide of zinc and oxide of zinc combined with silica. The ore is then mixed with 33 per cent. of crushed coal and placed in dry clay retorts, each holding 27 pounds of the mixed coal and ore. These retorts are placed in layers, 56 in a furnace, the face of which is sealed up with fire clay, the orifices of the retorts being cemented in conical shaped tubes of baked fire clay, which project 18 inches from the furnace, and act as condensers.

The firing up is then carried on till the heat of the furnace is 2160° Fah., the vaporizing point of zinc.

The reduction of the zinc in the ore into metallic zinc vapor is done by means of the carbon and carbonic oxide gas depriving the oxide of zinc of its oxygen, and liberating metallic zinc as a vapor. This vapor is carried forward by the gases (which are formed by the reduction of the oxide of zinc) into the conical tube condensers, which project outside the furnace, the temperature of which is far below the vaporizing point of zinc attained in the retorts inside, and sufficiently low to condense the vapor into liquid metal. When this condensing process is going on, men go round the different furnaces, and, with iron hooks, draw out the melted zinc into large ladles, from which the zinc is poured into iron molds and cast into slabs of 30 lbs. weight. The gaseous flames which issue in great force from the orifices of the condensers are intensely brilliant and of all the colors of the rainbow—the brightest yellows, reds, violets and greens. As there are 16 stacks of furnaces, each having 56 retorts, the beauty of the colors at night may be easily imagined. The furnaces are charged twice in the 24 hours, each charging taking 1500 pounds of ore and coal. This process is known as the Belgian process.

While still hot, the slabs of Spelter are taken from the molds and rolled into rough plates which are cut into two pieces. From 9 to 12 of these pieces are placed in iron boxes in annealing furnaces, and are heated up to 300° hot enough to make water dance upon them in spherical globules before it evaporates. As soon as this heat has been attained, the pack of plates is taken out and they are all rolled out together. In 25 minutes the plates, two of which formerly made a slab of 10 by 18 inches, are rolled out into sheets, which, when trimmed, are 7 feet by 3 feet. Of the importance of these works it is unnecessary to say more than that their capacity is nearly equal to producing one-half the metallic sheet and oxide of zinc consumed in this country. The company makes annually 3600 tons of metallic zinc, 3000 casks of sheet zinc, and 3000 tons of oxide of zinc.

To make oxide of zinc, the carbonate and silicate of zinc, beyond being crushed and mixed with 33 per cent. of coal, is put into large fire brick furnaces just as it comes from the mines. Air is blown into the furnaces and the oxygen in it oxidizes the metallic zinc vapor, for which it has a great affinity, as soon as it is liberated. The oxide of zinc is thus formed, and is propelled by air forced into the furnaces into a high tower in white flocculent particles, with which are associated coal ashes and particles of other foreign substances. It is driven by powerful blowers through a series of chambers connected by pipes; the majority of the oxide associated with impurities deposits in the tower, and the less impure in the chambers and cooling house, the most flocculent and purest passing through pipes to which muslin bags are attached and in which it is collected. The best is like white wheat flour, though very much heavier, an almost impalpable powder. There are 52 of these brick furnaces in the works. They are charged every four hours from 750 to 1000 pounds making a charge. The pressure of air forced in is 24 pounds to every square foot of furnace.

Philadelphia and the Centennial.

The Philadelphia *Ledger* says: The patriotism and pride of the city and her people are now fully aroused. They are determined that if it lies within their power there shall be no such national discredit as paralyzing two years of laborious preparation for an International Exhibition, for fear that it will be a failure—that that there shall be no such national dish nor as cancelling national engagements and withdrawing accepted national invitations, because this rich and prosperous country has not the means to redeem its pledged word. And let there be no mistake about this. Philadelphia and her people neither desire nor expect to carry on this arduous undertaking without aid from other sources. They believe now, as they have always believed, that it is the duty of the national government to defray the bulk of the heavy expenditures the exhibition involves. They believe now, as they have always believed, that the people of the whole country should bear their fair share of the cost. They are not without hope that the States will yet come to the aid of their commissioners as New Jersey has done; and they are not without expectation that Congress will do its duty in making an appropriation. But still, while holding these views, they know that it will not do to postpone the work until such hopes and expectations shall be realized, and they know that the Centennial authorities are in need of immediate assurance as to what they can rely upon, if all other sources of aid should fail to become available in seasonable time. It was the spirit and sense and purpose of the meeting yesterday to assure the Centennial Commission and the Board of Finance that they shall not be left to the risk of failure, either on account of shortness of time or shortness of money, if the city of Philadelphia and her people have the power to protect them and the country from such a disgrace.

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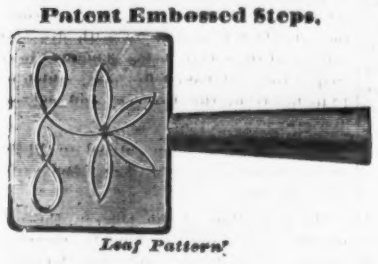
Patent Embossed Steps.

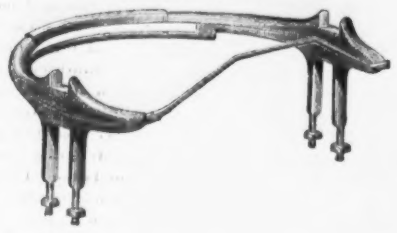


Leaf Pattern.

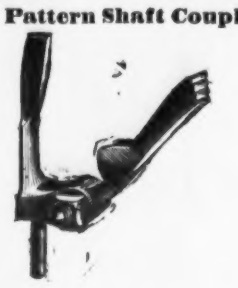
King Bolt Yokes.

Established 1850.

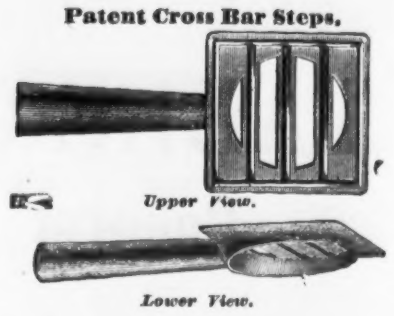
No. 6 Fifth Wheels.



1871 Pattern Shaft Couplings.

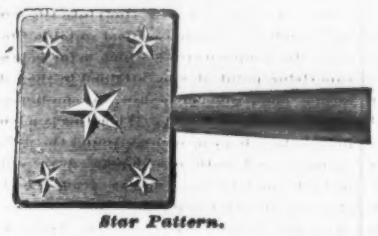


Patent Cross Bar Steps.



Upper View.

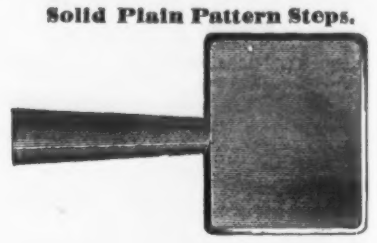
Lower View.



Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.

Solid Plain Pattern Steps.



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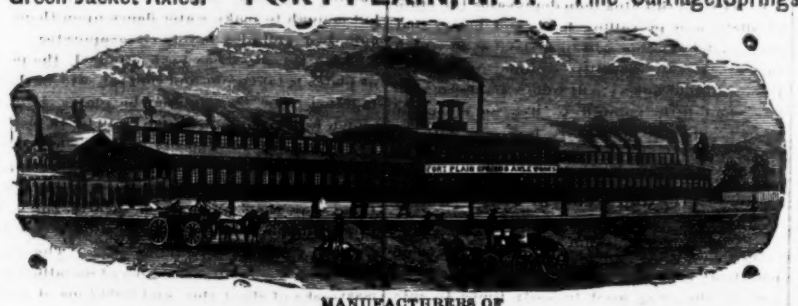

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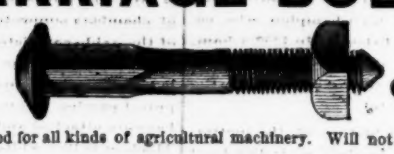

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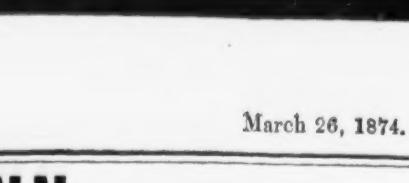

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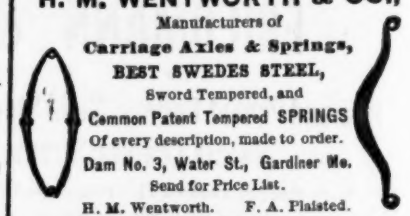

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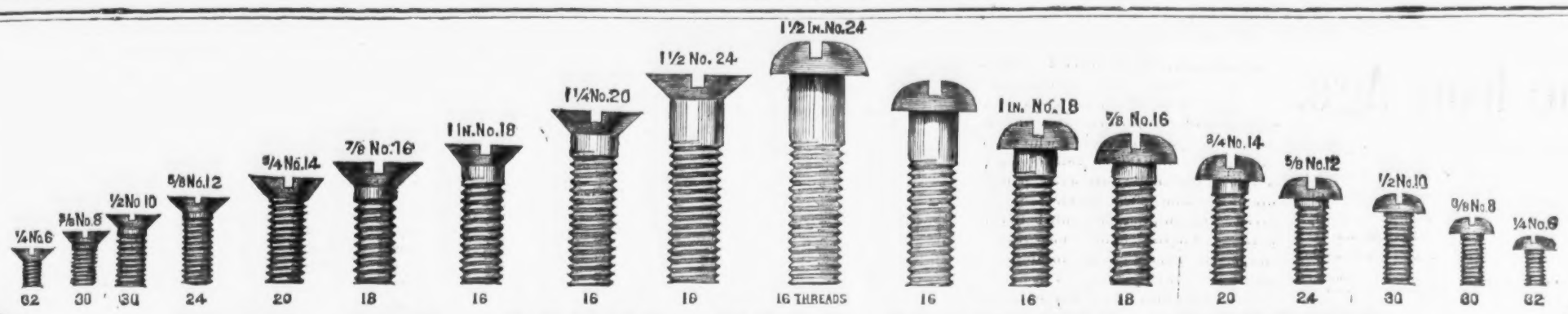

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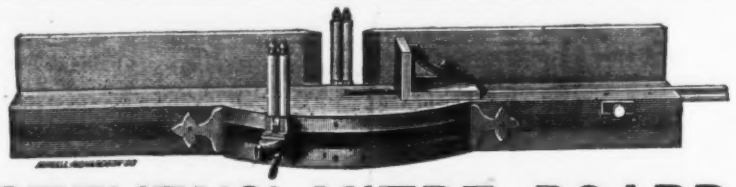

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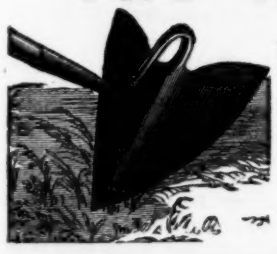

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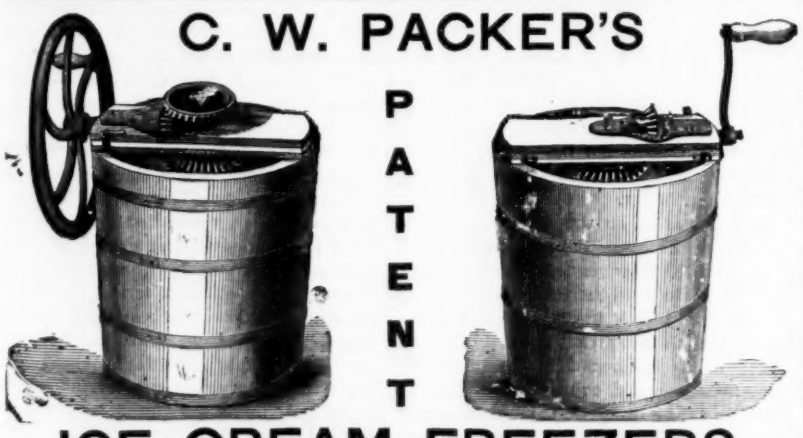

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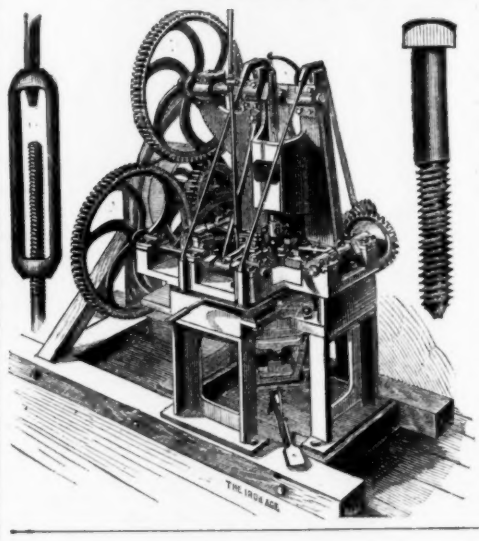

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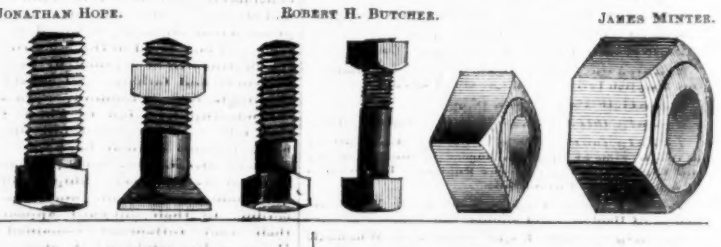

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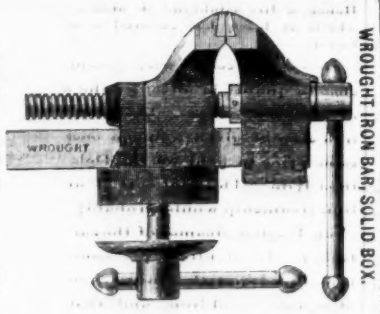

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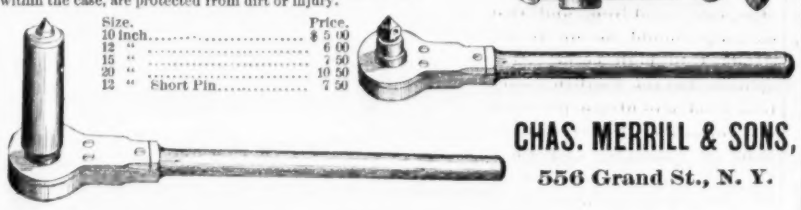

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American Iron Ships.

While the building of iron ships was still an experiment in this country, it was stoutly maintained by the advocates of a free American registry for foreign bottoms that the business could never be established here in successful competition with Great Britain. Our iron cost us too much, our labor was unskilled, wages were too high, our shipbuilders lacked knowledge and experience—in short, the difficulties were practicably insurmountable, and if we should build ships that would compare favorably with those of foreign construction, they would cost so much as to preclude the possibility of ever running them in successful competition with cheaper foreign vessels sailing under the British, French and German flags. We were told that, however good the policy of protection might be on land, it could not be made to apply upon the ocean, and that we could only protect shipbuilders at the expense of shipowners, and shipbuilding at the expense of commerce. Notwithstanding these predictions and assurances, iron shipbuilding has grown up during the past few years [illegible] on the Atlantic seaboard and on [illegible] it has become an important [illegible] We have now a large and growing [illegible] steamers engaged in the [illegible] trade, a line of iron [illegible] competing with established [illegible] for the carrying trade of the [illegible] Atlantic, and a fleet of iron ships [illegible] for the trade of the Pacific, with good prospects of success. That we can build good iron ships in this country, at a price which will enable them to be run in successful competition with the best ships of foreign build, no one who saw the *City of Peking* and *City of Taikio* lying side by side on the stocks last week, will venture to question. The problem has been solved. Our ships are not only better than those of English build, but they are cheaper—if strength and durability are considered. It is no longer a secret that, on the Clyde, everything has been sacrificed to cheapness, that "plates as brittle as glass" have been employed where builders have taken contracts at low prices, and that the average life of such ships has been much shorter than that of wooden vessels. In this country we have used better iron and built better ships. Builders have charged fair prices for good work, and our ship owners have got what they paid for.

As showing the difference between British and American iron bottoms, we may mention three instances which occur to us at the moment. The *Atlantic* struck a rock off the coast of Nova Scotia and broke in two, carrying most of her passengers to the bottom with her. This was a fair average British iron steamship. The *Ville du Havre* was struck by a sailing vessel in mid ocean, crushed like an egg shell, and sunk in less than a quarter of an hour. This was also a fair specimen of British iron ships. The *Wilmington*, an iron steamer built at Wilmington, Delaware, ran upon a reef off the Florida coast about a year ago, while on her way from this port to Havana with a full cargo. Seventy feet of the length of the ship rested on the reef, where it pounded for twelve hours. After being lightened by throwing some of the cargo overboard, she was backed off and proceeded to Havana, where it was found that, while the pounding she had gone through had dented and bulged some of the plates, not one was broken, nor even seriously cracked. A small patch was all that was immediately needed, and when this had been put on she returned to New York with a heavy cargo, after discharging which she proceeded to one of the Delaware shipyards to have the dents taken out of the plates. Here it was found that they were not so seriously injured as to need replacing, and they were rerolled cold and put back again. Can we wonder at the difference between the ships whose history we have briefly given, when we read in *Iron*, a journal of the British iron trades, such a startling statement as the following, called out by the loss of the *Atlantic*:

In the early days of iron shipbuilding it was not unusual to put as good iron into a ship as into a boiler: but it was soon discovered that an enormous saving might be effected by the employment of inferior material. Iron fit for no other purpose was applied to that of shipbuilding. Plates through which a foot clad in a stout boot might be kicked with ease, were considered good enough to stand between man and eternity. Metal so rotten that it broke in pieces when carelessly dropped on a hard surface, was employed in the construction of vessels destined to be manned by Englishmen—by husbands and fathers. All considerations but the single one of economy were sacrificed by the unscrupulous few to whom the lives of their fellow men weighed but little against a heavy balance at their bankers. This fertile cause of disaster was doubly dangerous on account of its treachery. Ships fulfilled the requirements of surveyors, and were classed according to their outward appearance, while their real rottenness remained concealed. Hence, a dire catalogue of catastrophes, one of which at least, has secured a dark page in history.

Now let us see to what extent this difference in quality is offset by the greater cost of American ships. The materials for an iron ship of given tonnage cost about the same price in gold on the Delaware as on the Clyde. The total cost of an American iron steamship would probably exceed that of an English steamer of the same capacity, from twelve to fifteen per cent.; but were it required that the ships should be built of equally good iron, and that the workmanship should be up to the American standard in both cases, we venture the opinion that the English vessel would cost from twelve to fifteen per cent. more than the American. It certainly could not be built any cheaper, and England has no longer any advantage in the competition, except the possession of larger capital and greater facilities for quick construction. Five years hence, should the iron shipbuilding industry experience the healthy and sustained progress now promised, we shall be in a position to compete with her for foreign orders to any extent, and perhaps it would not be too sanguine to place the date much nearer than that. The business is no longer an experiment. It requires large capital, enterprise and experience, but with the first of these three prerequisites we can at all times command the last two, and with such legislation as will give our capitalists confidence in the profits of shipbuilding and ship owning, and in iron manufacture, it will not be many years until we are in a position to compete successfully for orders with the most enterprising of British builders, and for freights with the most enterprising of foreign shippers.

The Patrons of Husbandry.

We have received from a correspondent in the West, a copy of a circular letter addressed to those whom it may concern, setting forth the objects and aims of the Grange movement, in terms so very general that they cannot be said to mean anything in particular. The most important feature of the circular is a declaration of principles on behalf of the National Grange, which lately met at St. Louis, from which we take the following:

For our business interests we desire to bring producers and consumers, farmers and manufacturers, into the most direct and friendly relations possible; hence we must dispense with a surplus of middlemen, not that we are unfriendly to them, but we do not need them. Their surplus and their exactions diminish our profits. We wage no aggressive warfare against any other interests whatever. On the contrary, all our acts and all our efforts, so far as business is concerned, are not only for the benefit of producers and consumers, but also for all other interests that tend to bring these two parties in speedy and economical contact; hence we hold that transportation companies of every kind are necessary to our success; that their interests are intimately connected with our interests, and harmonious action is mutually advantageous. Keeping in view the first sentence in our declaration of principles of action, that individual happiness depends upon general prosperity, we shall therefore advocate for every State the increase in every practicable way of all facilities for transporting cheaply to the seaboard, or between home producers and consumers, all productions of our country. We adopt it as our fixed purpose to open out the channels in nature's great arteries, that the life-blood of commerce may flow freely. We are not enemies of railroads, navigation and irrigating canals, nor of any corporation that will advance our industrial interests, nor of any laboring class. In our noble order there is no communism, no agrarianism. We are opposed to such spirit and management of any corporation or enterprise as tends to oppress the people, and rob them of their just profits. We are not enemies to capital, but we oppose the tyranny of monopolies. We long to see the antagonism between capital and labor removed by common consent, and by an enlightened statesmanship worthy of the nineteenth century. We are opposed to excessive salaries, high rates of interest, and exorbitant per cent. profits in trade. They greatly increase our burdens, and do not bear a proper proportion to the profits of producers. We desire only self-protection, and protection of every true interest of our land by legitimate transactions, legitimate trade, and legitimate profits.

It is evident from this that the Granges still cling to the idea that the prosperity of the agricultural communities of the West is dependent upon the cheap transportation of grain to the seaboard and thence to foreign markets. It is just here they make a great mistake. When there is no near market for farm produce one must be sought far away: but the true policy of those who seek the best interests of the farmer is to do what they can to secure him a market close at hand for his produce. The establishment of a manufacturing town in the center of an agricultural district would do more to promote the interests of those who till the soil, than cheap transportation will ever do. Farm produce will not bear long transportation, even though it be done at cost, and so long as it must seek a distant market, the producer will get but a small part of the price which the consumer must pay for it. This is something which the Granges have yet to learn, but until they learn it they will not accomplish much in the interest of agriculture.

As regards the class of persons known under the general name of "middlemen," the Granges have to learn that no man can make an honest living unless he renders some service for which some one is ready to pay. The "middlemen" are not mere parasites upon our commercial system: they perform, as a class, functions which are indispensable to the free exchange of services between the producer and the consumer. When the necessity for them ceases, they must render services of a different character, or starve. There never was and never can be a "surplus of middlemen." If the consumer can deal directly with the producer more economically and advantageously than he can through the medium of an agent, he will not pay the agent for effecting the exchange. It practically makes no difference whether the farmers are friendly to the "middlemen" or not. If they can dispense with their services they will do so, Granges or no Granges: if they cannot, they will continue to sell them their produce at a price which will enable them to sell it again at a profit. This is a matter which regulates itself in accordance with the general laws which govern all classes of commercial transactions. The same is true of interest, the profits of trade, the weather, and a great many other things which the Granges would probably like to regulate to suit themselves, but which are not materially affected by preambles and resolutions. A society as strong in numbers and influence as the Patrons of Husbandry, is capable of exerting an important influence for good, but if we can accept the above as an authoritative declaration of its principles and purposes, we are justified in believing that its labors will end where they began—in talk.

Messrs. Clarke, Reeves & Co., of Philadelphia, proprietors of the Phœnixville Bridge Works, announce the completion of the iron bridge over the Saco River, at Biddeford, Me. This has been a rapid piece of work, and well illustrates the advantages of the American system of building iron bridges—that of interchangeable parts and pin connections, as contrasted with the system of connection by rivets. On January 20th, the wooden bridge, 600 feet long, was burned down. On the 24th, the Eastern Railway contracted with the Phœnixville Bridge Company for 3 spans of 133 feet each and 2 spans of 100 feet each, to supply its place. At that time the iron lay in puddle bar. The drawings were made, the iron rolled, finished into shape, and shipped by steamer and rail to Saco, and the spans erected, ready for use, in 40 days. The cost of the bridge is a little under $40,000.

The Cost of Iron.

Some months ago we published a table compiled by Mr. Wm. E. S. Baker, of the Duncannon Iron Company, Secretary of the Eastern Ironmasters Association, giving the cost of pig iron on furnace bank and of bar iron at mill, for a series of years. Objection was made to the showing of this table, on the ground that no allowance had been made for interest on capital invested, and that the totals did not, therefore, fairly represent the cost of the iron in the years indicated. Mr. Baker has accordingly revised the table, and added interest upon the value of the plant necessary to an average production, in which shape we republish it on another page. Copies, in convenient form for reference, may be had upon application at this office.

In view of the present condition of the iron market, these figures possess especial interest and significance. To develop our resources to the fullest extent, and command for American iron the universal market which is now opening to it, we must make iron cheaper than it is now made. How can this be done? The question is an easy one to ask, but impossible to answer specifically. Some furnaces and mills, owing to favorable location, abundant capital, and facilities for getting their materials at cost, can make iron below the figures given in Mr. Baker's table; others, less fortunate, cannot, and should the present condition of affairs continue, it is to be feared that many small establishments will be compelled to surrender their property to liquidate their debts. In seasons like this, only the strong can stand. In the meantime we are threatened with a heavy overproduction of pig metal, and it is quite certain that the competition which makers now have to fear is home competition. To meet this, as well as to so far reduce the cost of iron that we can profitably manufacture our surplus product for export, the iron masters must abandon for the present all idea of large profits, and devote their energies to making at the lowest price so much iron of the best quality as they can sell, and no more. They must summon to their aid the chemist and the scientific metallurgist, that the smallest waste may be detected and guarded against. They must conduct their business as if it were only barely possible to make a profit, and not until they have exhausted the possibilities of economy will they be in a position to realize the fullest benefit of prosperity, and to guard against the dangers of adversity.

The outlook is not so pleasant as it was a year ago, nor as we hope it will be a year hence; but it is the part of wisdom to look at the facts as they are, and to prepare for the worst, even while hoping for something better. For the present it would seem to be the wisest policy to make no more iron than the market calls for, and to blow in no furnaces now standing idle until there are unmistakable indications of an improvement in trade great enough to warrant an increased production. In the meantime, the intelligent iron master should consider the subject of economy from every side. He should learn the exact relation which exists between that which goes into his furnace and that which comes out of it; whether his furnace is able to make as much iron as it is possible to make in proportion to its capacity; whether his coal, his ore and his limestone are the cheapest he can buy, considering both quality and cost; and whether it is possible to economize labor by making machinery do work which he has hitherto employed men to perform. In matters of this kind he cannot afford to trust his judgment merely. He must reduce what he believes and what he doubts to a scientific demonstration. We can no longer afford to run our furnaces hap-hazard to make poor iron at $33 @ $34 per ton when it is possible to make better iron at $30 @ $31, or to depend upon manual labor for any service which can be rendered by machinery. In the struggle upon which we have entered some must fail; those who do not will be the ones who will have learned how to profit most fully by returning prosperity.

Cheap Illumination.

We have heard of many economical methods of illuminating dwellings—at least the inventors have assured us they were economical—but one has been brought out in Pittsburgh, Pa., which, if all that is said of it is true, not only costs nothing, but would give the consumer a good income if he used it extensively. The invention and its merits are thus described in a Pittsburgh paper:

The apparatus is exceedingly simple—as most useful inventions are—and is safe, convenient, cheap and effective. The light produced is steady, soft and brilliant—of greater illuminating power than gas—and the apparatus can be applied anywhere and managed by the most awkward Biddy in Christendom. Our common lamp oil is the material used, but the method of supply renders an explosion impossible, even if the lighter and more inflammable oils were used. It is estimated that this light is *two hundred and fifty per cent. cheaper than gas*, and the apparatus is comparatively inexpensive. There may be one or one hundred burners supplied from the same reservoir, and so nice is the adjustment that the single burner will be no better, and the one hundredth no more poorly supplied—each taking just what is required and no more. Gas pipes can be used, as for ordinary gas. Where there are no pipes, chandeliers can be substituted; and where less expense is desired, brackets or single burners can be supplied. The chandeliers and brackets are very ornamental, and at the same time useful, as the feeding apparatus is embraced therein.

We are glad to hear of this invention. A light which is two hundred and fifty per cent. cheaper than gas would entitle the person using it to claim a considerable bonus upon some one—probably the inventor. It would cost one hundred and fifty per cent. less than nothing, and whether the consumer received the difference or not, he would have the satisfaction of knowing that the more lights he burned the less it would cost him. This is just the kind of illuminating apparatus we have been looking for, and we hope we shall not be disappointed in this instance.

A Needle Manufacturers' Association Formed.

A meeting of sewing machine needle manufacturers was held at the New Haven House, New Haven, Conn., on the 17th inst., for the purpose of adopting measures to advance the mutual interests of American needle makers, and an organization was formed under the name of "The American Needle Makers' Association." Mr. Charles Alvord, of the Excelsior Needle Company, of Wolcottville, Conn., was elected president, and Mr. George H. Blelock, of the National Needle Company, of Springfield, Mass., secretary and treasurer. As most of the work in an association of this character falls upon the secretary, who is the executive officer, we are satisfied that the Needle Manufacturers' Association will not languish for want of good management. Mr. Blelock is a gentleman of energy and capacity, peculiarly well fitted for the secretaryship, and we congratulate the association upon securing his services in that capacity.

The Waste of Oil.

If there be one thing more than another which is likely to be wasted about a workshop, it is oil. This waste is not wanton, or even intentional, perhaps, but those who do not have to pay for oil seldom realize how important it is to economize it, and it is not often they know how to use it properly. It would not be extravagant, perhaps, to assert that half the oil used about machine shops and metal working establishments in general, is wasted. For example, if a workman wishes to oil his file for finishing, he will pour a stream over its surface, allowing two-thirds or more to drip on the floor, when the file could be sufficiently moistened by a small bunch of waste, or better, a small sponge saturated with oil, without wasting a drop. If a hole is to be tapped in iron, whether cast or wrought, the workman too often prefers lubricating oil to patience and "elbow grease," and pours on the oil until he saturates the substance or fills the pores of the iron. In ordinary cast iron, a tap, properly made and judiciously used, can be run without oil, or with a very small quantity, and in this work, as in many other processes, a saponaceous liquid is equally as effectual and much cheaper. It is an old and worn out notion that almost every operation on the metals, and almost every use of a tool, must be accompanied with oil; neither is it correct that oil alone is a lubricant. Holes may be drilled and tapped, and surfaces finished without the use of oil, although some lubricant may be necessary. The addition of oil to an already clogged file, milling tool, saw or rotary cutter, is not only a waste, but is no aid to the progress of the work. Either of them may be quickly and effectually cleaned either by wiping with waste, combing with the card, or heating over the forge fire; when they will do the work required much better than if they had to overcome the resistance of a body of viscid oil.

In the lubricating of shafting, also, great waste is occasioned. Where shafting is suspended in ordinary boxes, most of the

AMERICAN PIG AND BAR IRON.

Average cost per ton of Pig Iron on Furnace Bank, and of Merchant Bar in Mill, from 1850 to 1874, inclusive. Compiled for The Iron Age from original data by Mr. Wm. E. S. Baker, Secretary of the Eastern Iron Masters' Association.

AVERAGE COST OF PIG IRON, 1850 TO 1874.

	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874 Mar. 1
Cost of Ore to the ton of Pig Iron	$ 5 75	5 44	5 55	5 97	6 65	7 51	7 50	7 75	7 66	7 08	7 45	7 35	7 08	7 49	9 12	13 13	12 19	11 71	10 92	11 86	12 96	12 67	13 64	14 87	14 75
Cost of Coal to the ton of Pig Iron	3 70	3 36	3 65	3 23	3 53	4 63	3 90	3 89	4 06	3 26	3 49	3 26	3 68	3 42	5 41	9 66	7 55	7 44	7 11	7 41	7 08	8 59	7 28	7 45	7 90
Cost of Limestone to the ton of Pig Iron	93	96	1 09	1 06	1 38	1 26	1 16	1 14	1 18	1 15	1 21	1 17	1 11	1 20	1 93	2 85	2 65	2 76	2 51	2 14	2 44	2 08	2 04	1 98	2 03
Cost of Labor to the ton of Pig Iron	2 22	1 61	2 02	2 00	2 45	2 85	2 58	2 30	2 10	1 82	1 87	1 97	1 57	2 07	2 85	4 56	3 46	3 99	3 86	3 46	3 89	3 54	4 69	5 11	4 46
Cost of General Contingencies	1 65	1 93	2 03	2 62	1 99	2 62	2 91	2 16	2 73	2 83	2 83	2 86	2 67	2 35	1 66	2 01	2 03	1 98	1 90	1 96	3 67	2 77	2 93	3 00	2 30
Cost at Furnace Bank	14 25	13 30	14 34	14 88	16 00	18 87	18 05	17 24	17 73	16 14	16 85	16 61	16 11	16 53	20 97	32 21	27 88	27 88	26 20	26 83	30 04	29 65	30 58	32 41	31 47
Add interest on capital invested, on a product of 6000 tons	1 05	1 05	1 15	1 22	1 37	1 29	1 21	1 47	1 22	1 28	1 36	1 57	1 57	1 40	1 59	1 61	1 64	1 80	1 63	1 71	1 85	1 82	1 75	2 08	2 00
Total cost to the producer	$ 15 30	14 35	15 49	16 10	17 37	20 16	19 26	18 71	18 95	17 42	18 21	18 18	17 68	17 93	22 56	33 82	29 52	29 68	27 93	28 54	31 89	31 47	32 33	34 49	33 47

AVERAGE COST OF BAR IRON, 1850 TO 1874.

Cost of Pig Iron to the ton of Finished Bar Iron	$ 25 65	24 90	25 71	25 25	25 42	17 42	64 32	84 33	34 30	61 26	54 25	61 25	35 24	36 27	90 41	40 68	60 50	77 50	64 44	53 43	29 43	63 40	52 49	11 43	24 41	20
Cost of Coal to the ton of Finished Bar Iron	5 70	5 61	5 61	5 81	6 00	8 28	6 59	6 00	5 49	5 17	5 27	5 39	6 19	7 66	8 44	13 03	8 92	9 13	8 64	8 33	8 55	7 55	8 43	8 55	8 46
Cost of Labor to the ton of Finished Bar Iron	10 43	10 17	10 37	11 06	15 12	14 70	12 85	13 06	11 77	10 68	10 90	11 12	11 78	15 14	18 94	27 45	20 61	22 02	19 87	20 65	18 57	17 70	21 55	20 37	19 02
General Contingencies	4 64	4 83	4 88	7 05	10 39	10 78	8 88	10 38	10 84	7 91	8 78	8 71	10 03	7 66	9 15	18 03	11 50	9 44	7 70	7 75	7 03	7 85	5 74	5 83	5 29
Cost in the Mill, finished	46 42	45 51	46 57	49 17	73 68	76 40	61 16	62 78	58 71	50 30	50 56	50 57	52 26	58 36	77 93	127 11	91 80	91 23	80 74	80 02	77 78	73 62	84 83	77 99	73 97
Add interest on capital invested, on a product of 6000 tons	1 56	1 49	1 54	1 50	1 80	1 63	1 59	1 89	1 65	1 60	1 71	1 90	1 75	1 77	1 80	2 80	2 01	2 05	1 96	2 09	2 15	2 20	2 22	2 25	2 10
Total cost to the manufacturer	47 98	47 00	48 11	50 67	75 48	78 03	62 75	64 67	60 36	51 90	52 27	52 47	54 11	60 13	79 73	129 91	93 81	93 28	82 70	82 11	79 93	75 82	87 05	80 24	76 07

Quantity of Ore used to make 1 ton of Pig Iron, average of 20 years.....tons, 2·17·0·22
Quantity of Coal used to make 1 ton of Pig Iron, average of 20 years..... " 2·00·3·05
Quantity of Limestone used to make 1 ton of Pig Iron, average of 20 years..... " 1·04·3·22

The above group of furnaces used Juniata and Montour Hematite Ores, and a little Cornwall. The coal came chiefly from the Wyoming and Lehigh Valleys.

Quantity of Pig Iron used to make 1 ton of Finished Bar Iron, average of 16 years.....ton, 1·05·2·00
Quantity of Coal used to make 1 ton of Finished Bar Iron, average of 16 years..... " 1·16·2·19

The above rolling mills used Gray and White Pig Iron and Broadtop and Cumberland Coal.

oil leaves the journal almost as soon as poured into the box, and finds its way, dirty and fouled, into the drip pan; once there it is nearly worthless for shop use. Gummy, dirty oil, charged with foreign matter, and half oxidized by exposure to the atmosphere, although often used for tapping and screw cutting, is unfit for even those purposes. It corrodes the taps and dies, and by its adhesive quality adds greatly to the power required to do the work.

We might add other illustrations of waste of oil, or extravagance in its use, but this article is intended to be suggestive rather than instructive. Every manufacturer can, by investigation and experiment, find out what proportion of the oil used in his business is wasted, and by a judicious oversight he can usually effect an important economy in the amount annually consumed. It is economy, or a disregard of it in such little matters that often makes the difference between profit and loss to a manufacturer.

Tests of Iron Made by the Pembroke Iron Company.

Last December, some samples of iron, made by the Pembroke Iron Co., of East Bridgewater, Mass., were tested by Mr. J. P. Miner, superintendent of the Standard Chain Works, of that place, with the following very satisfactory results:

	Extended In inches.	Broke. Tons.	Broke. Lbs.
No. 1	4·875	31·5	70,560
No. 2	8·25	29·75	66,640
No. 3	9·25	29·5	66,080
No. 4	8·25	34·5	77,280

The length of each sample was 42 in., and the diameter 1⅛ in.

This showing was so satisfactory that samples were sent for by the Navy Department, to be tested at the Washington Navy yard, on a dead weight lever testing machine.

The following is the result of these tests:

NAVY DEPARTMENT,
BUREAU OF EQUIPMENT AND RECRUITING,
WASHINGTON, February 7, 1874.

Messrs. W. E. Coffin & Co., Boston—GENTLEMEN: The Bureau transmits herewith copy of reports of tests of the Pembroke Iron, at the Washington Navy Yard. Very respectfully, &c. WM. REYNOLDS, Chief of Bureau.

PEMBROKE IRON, TESTED AT THE WASHINGTON NAVY YARD, JANUARY, 1874.

No.	Form.	Mix No. 1. Broke at lbs.	Mix No. 2. Broke at lbs.	Mix No. 3. Broke at lbs.	Mix No. 4. Broke at lbs.
Bar 1	Hour Glass.	.....	.....	.....	.....
Test 1	" "	70,800	64,800	64,400	64,400
2	" "	70,200	71,200	70,400	64,900
3	" "	71,200	79,400	81,200	64,300
4	" "	70,700	63,400	65,400	64,000
5	" "	71,300	.....	.....	.....
Bar 2	" "	67,000	.....	.....	.....
Test 1	" "	67,200	64,960	64,500	65,040
2	" "	69,600	64,700	64,500	65,540
	Average.	70,142	68,076	68,400	64,680
Bar 1	1-4 Cylinder.				
S. 1	" "	57,100	54,800	54,100	55,400
2	" "	57,400	54,400	54,600	55,600
	Average.	57,250	54,450	54,350	55,500
*Bar 1	1½ long bar Cylinder.	61,200	56,000	60,200	59,800
† 2	" "	63,000	57,200	60,100	60,400
	Average.	62,100	56,600	60,150	60,100

No. 1 Mix—*very uniform and highest average ever obtained on the machine.*
No. 2—Not uniform, develops occasional high strength.
No. 3—A good iron, but not so uniform as No. 1, *but broke one piece at the highest strength ever obtained for American Chain Iron.*
No. 4—Uniform, but not so high.
*Bars 18 inches between marks, the stretch from ¾ to 1 inches—nearly uniform.
†Bars 32 inches between marks, the stretch from 5½ to 6¾ inches—nearly uniform.

These tests are computed from area of iron before *breaking*; not fractured area, as many tests are. Fractured area would bring it up 20 to 30 per cent.

LINK TESTS OF PEMBROKE IRON AT WASHINGTON NAVY YARD.

Size, 1⅛ inches. Double Proof, 69,200 lbs. Size of End Link, Navy Yard Iron, 1 7-16. Size of Proving Chain, Navy Yard Iron, 1⅛.

No. 1, Mix.

Sample 1, 1 link, unstudded, broke "end link" at 80,500 lbs.
Sample 1, 1 link, unstudded, broke at 85,600 lbs.; 2d pull, broke in quarter.
Sample 2, 1 unstudded, 1 studded (2 links), broke at 91,800 lbs.; 1st pull broke studded link in "weld."
Sample 2, 2 unstudded, 1 studded, broke at 92,800 lbs.; 2d pull broke studded link in "quarter."
Sample 3, 1 link, unstudded, 1st pull broke end link at 78,000 lbs.
Sample 3, 1 link, unstudded, 2d pull broke end link at 90,000 lbs.
Sample 4, 1 unstudded, 2 studded, broke at 95,400 lbs.; 1st pull broke studded link in weld.
Sample 4, unstudded, 2 links, broke at 104,200 lbs.; 2d pull broke in quarter.

No. 2, Mix.

Sample 1, unstudded, 1 link, 1st pull broke "end link" at 104,400 lbs.
Sample 2, 3 links, 1st pull broke "end link" at 96,000 lbs.
Sample 3, unstudded, 1 link, broke at 110,600 lbs.; broke in "quarter."
Sample 4, 1 unstudded, 2 studded, broke at 94,400 lbs.; broke studded link in "weld."

No. 3 Mix.

Sample 1, unstudded, 1 link, 1st pull broke "proving chain" at 110,000 lbs.
Sample 1, unstudded, 1 link, 2d pull broke "end link" at 114,000 lbs.
Sample 1, unstudded, 1 link, 3d pull broke "proving chain" at 70,000 lbs.
Sample 1, unstudded, 1 link, 4th pull broke "proving chain" at 92,000 lbs.
Sample 1, unstudded, 1 link, 5th pull broke shackle at 85,600 lbs.
Sample 1, unstudded, 1 link, broke at 114,200 lbs.; 6th pull broke sample in weld.
Sample 2, 1 unstudded, 2 studded, broke at 101,000 lbs.; 1st pull broke studded link in "weld."
Sample 3, unstudded, 1 link, first pull broke end link at 96,400 lbs.
Sample 3, unstudded, 1 link, broke at 108,400 lbs.; 2d pull broke in quarter.
Sample 4, 3 links, broke at 82,800 lbs.; 1st pull broke studded link in "weld."

No. 4, Mix.

Sample 1, 1 link, 1st pull broke end link.
Sample 1, 1 link, broke at 108,400 lbs.; 2d pull broke sample in quarter.
Sample 2, 1 unstudded, 2 studded, 1st pull broke shackle at 92,800 lbs.
Sample 2, 3 links, broke at 102,800 lbs.; 2d pull broke sample in weld.

Scientific and Technical Notes.

CRUDE RUBBER IN LUBRICATING OILS.

Dingler's Journal gives the following description of the preparation of lubricators from bog head coal oil, and of an instrument for testing the body of the oil. When the crude oil is subjected to fractional distillation, the naphtha goes over below 250°, and has a specific gravity of 0·750°; the illuminating oil distills at 250° to 590°, and has a specific gravity of 0·815°, while paraffine oil comes over between 600° and 856°, and has a specific gravity of 0·880°. The latter is exposed to a cold of 10° F., when the paraffine separates and the oil is pressed out for use as a lubricator. It must, however, be purified chemically, and finally washed with lye to remove all free acid. This renders it superior to the vegetable and animal oils, which sometimes contain enough acid to attack copper and brass. It is, however, too thin and fluid, having too little body, and is generally mixed with other oils, especially sperm oil. For heavy machinery and locomotive axles, Coleman & Ewing employ caoutchouc or crude rubber with excellent success. For quickly determining the body or viscosity of a lubricating oil, Coleman employs a glass cylinder ending at the bottom in a funnel provided with a stop cock. It is filled with the oil to be tested, which is heated to 120° by a steam mantle. The stop cock is then opened and the time noted which it takes the oil to run out. In a certain apparatus of this kind it took German rape-seed oil 8 minutes to run out; French rape oil, 11 minutes; lard oil, 7 minutes; neatsfoot oil, 8 minutes 30 seconds; seal oil, 6 minutes 30 seconds; sperm oil, 5 minutes; Young's mineral oil, 2 minutes 45 seconds; Coleman & Ewing's ordinary lubricator, 8 minutes 30 seconds; locomotive lubricator, 11 minutes.

ARTIFICIAL FLOWERS OF TIN.

In a recent number of a Berlin journal we find the following directions for making accurate copies of natural flowers and leaves from ordinary sheet tin: The method is somewhat similar to that employed for wax flowers, but the dyes, of course, require to be made of stronger material. The leaf, or petal to be copied, is first oiled on one side and then laid lightly upon some dry plaster Paris, or very fine sand, in such a manner that the oiled surface is uppermost. A little bank of clay is built around it, and the mixture of plaster Paris and water poured in, care being taken to remove the air bubbles with a soft brush. Instead of plaster Paris paste, melted stearine, mixed with powdered gypsum, may be employed where the leaves are quite thick and strong. Very delicate leaves must first be painted over with a brush dipped in soap water, after which several thin layers of plaster Paris are applied with a brush, fine wire being introduced if necessary to give it firmness. The leaves thus prepared are either oiled and used to make plaster casts, or they may be coated with black lead and have copper deposited upon them by electricity. The upper stamp having been formed, the matrix, or lower stamp, is easily made from this. The tin is first cut in the required shape, either by hand or by a suitable die, and then pressed into the required shape between iron or steel stamps, cast after the plaster models just described. Each of the pieces required to form a flower, having been prepared separately, they are carefully soldered together, a stem and leaves added, and the whole object so bent and twisted as to avoid the appearance of stiffness. They may finally be painted with the natural colors, and varnished. These tin flowers are especially adapted to fountains and similar purposes.

Dr. Kuenzel has recently published the results of his experiments upon

THE INFLUENCE OF CHLORINE UPON IRON.

He says that when strips of fine sheet iron, which have not been cleaned by acid, are welded together, the iron thus formed is generally of a better quality than that of the sheet metal employed. On the contrary, if strips of the same quality of sheet iron are first placed in muriatic acid, and afterward forged together, a much poorer quality of iron will be produced than was originally taken. This he attributes to a small quantity of chlorine taken up by the iron, which is thus rendered cold short. In 1869 and '70, Dr. K. worked up more than a thousand tons of scrap tin. Muriatic acid, mixed with a little nitric acid, was employed to remove the tin, and the iron obtained, and which was perfectly free from tin, was of a very poor quality, although an excellent quality is always used for making the sheet tin. If the iron which had been freed entirely from tin, was made into a pile and heated in a furnace, it could be rolled very easily, and the resulting iron had a beautiful polished surface, but, owing to the chlorine present in it, was cold short to an extreme. The rolling of such iron presents the appearance of fireworks, as the chloride of iron is expelled and shoots out like rockets. Fortunately, this fault may be turned to advantage in removing phosphorus from iron during puddling. Chlorine and phosphorus cannot exist at the same time in a metal, and by introducing the proper quantity of these scraps into the puddling furnace, along with a charge of iron that contains phosphorus, the quality of the iron is greatly improved. If, however, more chlorine is introduced than is necessary to combine with the phosphorus the whole charge will be injured, and of course the addition of this detained iron to a charge of iron that contains no phosphorus will do it still more damage.

Some experiments have been recently made in Austria by A. Eschka, Assayer of the Royal Imperial Assay Office, on

REMOVING IRON FROM ZINC BLENDS BY THE MAGNET.

The experiments were made with blend from Pribram, which contains 33·29 per cent. of carbonate of iron, 6·75 per cent. iron pyrites, and only 25·67 per cent. of sulphide of zinc, the remainder being manganese, lime, magnesia, lead, quartz, and other impurities. When pure carbonate of iron is ignited for half an hour it is entirely converted into the protosesquioxide, which is attracted by the magnet. On heating the blend just mentioned without admitting the air, it was found that it lost 15 per cent. of its total weight, due chiefly to carbonic acid expelled. Of this residue 46 per cent. was attracted by the magnet, and it was found that the amount of iron that could be removed in this way equaled 43 per cent. of the total weight after ignition, leaving only 7 per cent. of iron in the residue. The manganese was all removed with the iron, as well as some other adhering substances. With full access of air the results were but slightly different. The amount of metallic zinc in the blend was at first only 17·2 per cent.; after concentration by the above process it was increased to 32·8 per cent. There is, however, a slight loss of zinc which adheres to the iron and is drawn out by the magnet. This amounts to nearly one-fifth the total quantity present at first, if the air is excluded during the roasting or igniting; if air is admitted the loss is but half as great, while the concentration is nearly the same, the difference being only 2 per cent.

An Over Production of Pig Iron.

We have received the following letter from a well known iron master:

To the Editor of The Iron Age: There is no use in disguising the present condition of the pig iron market, and producers should look this fact squarely in the face—*i. e.*, the present production of this country is far beyond its present requirements, and unless some sensible move tending to limit the production is made by the furnacemen, the manufacture of pig iron will, for the next three years, result in a loss to the makers. A reduction of make, coupled with the gradual increase of ordinary consumption consequent to low prices, would, in perhaps one year, raise prices to a point that would insure a fair and reasonable profit. Take four of the leading iron consuming cities of this country—Pittsburgh, New York, Philadelphia and Baltimore—and there are but few, if any, furnaces which find a market in either, that can, at a living profit, make, deliver and sell their good iron at less than $35 for gray forge, $37 for No. 2 and $40 for No. 1, and there is now no foreign competition that could reduce prices below these figures.

The great object to be attained is to keep pig iron at such a price as to insure our mills a fair profit by selling their product at a less price than it can be imported. Few persons fairly estimate the actual cost of pig iron; they, as a general rule, consider only the cost of fuel, ore limestone and labor, without calculating royalty on ore produced from mines that furnaces have purchased at a large cost, and without a proper estimate of interest, which two items will, on an average, amount to about $4 per ton. To bring about a concerted action of the producers is, I will admit, a very difficult matter to accomplish in this country, on account of its extended area, and the varied circumstances which govern different locations, but low prices for a succession of months will, and must, gradually reduce the make. Many, hopeful of better times and higher prices, attribute the present low prices and dullness of the trade to the effects of the late financial panic, but the panic had nothing whatever to do with the stern facts, but only brought us to a quicker realization of them. If the panic had not taken place, the same low prices and dullness would now exist. The production from 1868 to 1873 was scarcely equal to the demand, but then we must consider that during that period there was practically an artificial demand caused by the unprecedented construction of railroads. I believe statistics show that within the past eight years 30,000 miles of railroads were built in this country—a greater number of miles than will in all probability be built in the next sixteen years, and most of those built within that time have not yet required any renewal of rails, but must, say within three years, come into the market for a new supply; then there are many projected railroads that would now be in course of construction were it not for a want of capital, and many roads not yet projected are needed for the successful development of the present isolated portions of our country. It is a great mistake to assert, as some do, "that we have built railroads faster than the requirements of the country demanded them;" we have only built railroads faster than our available cash means warranted, and, unfortunately, those sections of our country now sadly in need of railroads are those the least able to build them, simply because, for want of railroad facilities to send their produce to market, they have not had an opportunity to make money.

So large an unfinished country as the United States demands a greater supply of money to develop its vast resources in accordance with the wishes and energies of her people, therefore an increase of currency is absolutely necessary to insure future development and prosperity. There has been a great cry against what many persons call an "irredeemable paper currency." Now, one hundred ten dollar government notes are no more irredeemable than a one thousand dollar government bond—they are both "promises to pay;" and so long as the government owes one thousand dollars, and there is a deficiency of currency, the working business class of the country have a right to demand that it be represented by currency for the general good, rather than in large bonds only for capitalists to purchase for investment. If the issue of small denominations would increase the debt of the government, then, of course, it would be unadvisable to have an increase of currency; but as it does not increase the debt, why then not have a greater amount of the government indebtedness represented in convenient shape for the use and benefit of all?

Recurring again to the production of pig iron, the present outlook indicates that it will be at least two years before the consumption of this country will be fully up to its present producing capacity, therefore it behooves all furnacemen to restrict their output to the smallest practical limit; let those having three or more furnaces put one-third out of blast, and those having a less number reduce their make one-third, which can readily be done by reducing the number or size of their tuyeres so as to blow a smaller quantity of blast, still retaining the desired pressure, and the labor per ton of iron will be but slightly increased, while, in many cases, the consumption of fuel per ton of iron will be less. It is better to make 200 tons per week at a profit of $5 per ton than to make 300 tons at no profit, and the sooner furnacemen adopt such a policy the better it will be for them, and also for the consumers of iron, for the irregularities in any trade that must necessarily occur when the producers are supplying the market at an actual loss, must cause fluctuation in prices, and in the end reduce production perhaps below the wants of the trade.

It is home competition, and not foreign importations, that has reduced prices to their present standard. If forge iron was $35 instead of $30, the mills could put up their prices correspondingly, and still English iron could not be imported at a profit, and if forge iron was reduced to $25 there would be a corresponding decline in finished iron, and the mills would still complain because of no profit. The fact of over production is undeniable, and we must make less iron until the country requires more.

A PIG IRON PRODUCER.

A Mineral Exchange in St. Louis.—The proprietors of the St. Louis *Railway Register* have lately opened a mineral exchange and reading room, at No. 509 Walnut street, in that city. The chief attraction of this exchange is an extensive and interesting classified collection of ores, clays, coals, building stones and valuable minerals of all kinds gathered along the lines of Western railroads. Over ten thousand specimens are already in the cases, including iron, lead, zinc, coal, gypsum, fire clays, honestone, marble, granite, limestone, sandstone, paints, ochres, baryta, copper, rock salt, uranium, tellurium, nickel, cobalt, kaolin, steatite, mica, manganese, gold, silver and other minerals too numerous to mention. There are also on file in the reading room all the journals, including *The Iron Age*, which those interested in mining, metallurgy, manufactures or railroads have occasion to consult. It is open to all who may choose to avail themselves of its facilities and conveniences.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, March 23, 1874.

After a weary winter of delay and uncertainty it appears as if Congress were at last about to take some definite action on the currency question and allow the business of the country to go on. The usual business settlements of the first of April, now near at hand, will, it is likely, give some impulse to trade, and from appearances in some branches in this city, it is evident that all that is needed to develop a lively business is a restoration of confidence as to the future by the settlement of the currency question.

The dry goods trade here has fairly commenced for the spring, and gives indication of being much more considerable than had been expected. As this is always looked to as an index for the general business of the year, it is to be hoped the promise will be borne out. As yet, however, there is nothing encouraging in the iron outlook for the immediate future, unless it be a general disposition toward the completion of repairs and improvements previously under way, with, perhaps, the belief of a speedy revival. Some two weeks since the blowing out of the Crane Iron Company's six furnaces at Catasauqua, on account of a strike by the laborers, was noticed. This represents the second largest furnace production in the country, with an annual product equal to sixty-five thousand tons of pig metal. As yet there are no signs of the furnaces resuming production, not especially on account of price of labor, as the strikers would, no doubt, gladly accept the terms of the company, but owing to the dullness of the demand for iron. This week we have news of another suspension of production by the largest iron works in the United States, the Cambria Iron Works, at Johnstown, Pa. Here the local papers assert the suspension is complete in all the works, which include blast furnaces, rolling mills, Bessemer works, machine shops, coal and iron mines, etc. The ostensible cause is a threatened strike of coal miners for higher wages, but in reality, the local reports say, from want of orders, the company having for some time been running the works and piling up iron at a loss. The capacity of the Cambria works is between eighty and ninety thousand tons of rails per annum, and it is a bad outlook for the iron trade when the largest rail mill in the country, and nearly the largest furnace company in the country, are both idle, with no prospect of speedy resumption. In the case of the rail mill the argument may be made that it is not good business policy to devote such an extensive works exclusively to the production of only one article of the general consumption of iron; but previous to the panic there was no reason to suppose that the demands for railway iron could be supplied in this country. Nor, indeed, is there now any such reason, had Congress, by proper action, allowed the country to revive from the effects of a really causeless panic. Hence, the members who have been sacrificing the business interests of the country by their quarrels over individual schemes of finance, may squarely charge to themselves the damage thus done to two great industrial works, and directly to the thousands dependent upon these works for support.

The launch of the *City of Peking*, at Chester, during the week, so fully described in your columns, leaves us the certainty that American iron ships, fully equal in every respect to the best foreign types, can be built here, and the only trouble yet in our way is the foolish local jealousy which pervades the people of different States, and prompts to the belittlement of any step of progress in one place because of local advantages. Owing to fresh water navigation, proximity to the coal and iron of Pennsylvania, and abundant low priced real estate for works and homes for workmen, the shores of the Delaware River present the best site for iron ship yards. Had New York equal facilities these yards would have been erected there without doubt. Yet certain of the New York papers speak of the construction of the second largest iron ship in the world in American waters as a matter of no account, because she was built within the limits of Pennsylvania. The *World*, of your city, has also lately published an outrageous libel on the American line of steamers from this port, calculated to deter passengers from patronizing the line and damaging the company. Such journalism is unworthy even the partisan press, if the statements made were true. When, however, the facts are that the steamers of the American line are to-day the strongest ships in the North Atlantic trade, bar none, the publishers of such articles should be made to realize the effect of wilful falsehood to the injury of others, through the law of libel.

The gossip of the week is dull. The Committee of Investigation of the affairs of the Pennsylvania Railroad, asked for by the managers, does not seem to be in favor, several of the gentlemen appointed having declined to serve, and their places being filled with great difficulty.

Messrs. Robert Wood & Co., here, have just placed on exhibition a splendid bronze statue of General Scott, from a model by Launt Thompson, of your city. The statue is designed for the grounds of the Soldiers' Orphans Home, at Washington, and while presenting an excellent representation of the subject, is also an evidence of the skill we have reached in bronze casting. But this statue is a pigmy beside one I saw in process of molding a few days since at the studio of Bailey, the sculptor, at the works of Messrs. William Struthers & Sons, of this city. Knowing more about "skelp" than "sculping," I was surprised to find here that a statue has a *skeleton*, and that, too, of iron! The subject here was a colossal statue of General Blanco, I believe, intended for Caraccas, and ordered by the Venezuelan government. It is twenty feet high and will stand on a pedestal on top of a mountain 150 feet above Caraccas, which is itself pretty well up in the world. When finished the statue will represent the General in uniform, with military cloak and one hand resting on the hilt of his sabre. As I saw it it was an immense naked mud man, a good duplicate of the Cardiff giant stood on end. First, the skeleton of this individual is made of half-inch rod iron, and the natural anatomical pose thus given to the body. Around this skeleton is disposed a series of curiously shaped wooden lattice work, as like sections of a hen coop as anything else on earth. Upon this lathing is thrown the tempered clay, which is piled up at hand in rolls of the size and appearance of a French loaf. After the body is completed the arms are hooked on in iron and lattice work and a clay coat given them, the clothes, etc., in the rough, and then the sculptor models the mass into a life-like representation of his subject, after which it is cast in plaster and cut in marble.

Perhaps this description is as lucid as that given by the Irishman for casting a cannon—viz., "to take a hole and pour brass round it!" but it is the best I can give under the circumstances, and gives a new use for iron in the arts.

The work at the League Island Navy Yard progresses slowly, but the Civil Engineer in charge has just forwarded his report to Washington, which contains some facts and figures of interest concerning this site for what he, in common with others, considers the finest and most extensive dockyard in the world. The following gives the principal points of interest of the report: "It is stated that League Island proper is 410 acres in area; between the banks of the Back Channel, 355 acres; between Back Channel and Government avenue, 37·25 acres; and outside of banks to Port Warden's line, 170·25 acres, thus making the total area of government property, from Warden's line to Government avenue, 923 acres. Government avenue is the southernmost street on the city plan, is laid out 120 feet in width, and extends from the Delaware to the Schuylkill.

According to the matured general plan for developing this station into the finest and most extensive dockyard in the world, it is proposed to enlarge the island proper to an area of about 624 acres, and at the same time deepen the Back Channel into a storage basin of about 240 acres capacity, leaving 60 acres of firm land on the north, between it and Government avenue on the city side. This arrangement will give a water frontage, on the Delaware and Schuylkill, of some 2¼ miles in extent, and, including the Back Channel, of some 5 miles additional, about one mile of which, along the Delaware front, will have a natural depth of 25 feet at low water. The river there is 3600 feet wide to Red Bank, opposite, with a broad channel 30 feet deep at low water, where a fleet of the largest ships can safely anchor, and all below the Horseshoe Shoals. By the plan Broad street is continued across the island at a slight angle with its former course, the deflection commencing at the Back Channel, and bearing eastward, in order to make a right angle with the Delaware front, and facilitate the symmetrical arrangement of the streets and blocks in rectangles. Broad street is laid out 125 feet wide; the first and principal avenue nearest to and parallel with the Delaware front, 80 feet; all other streets 75 feet wide. The blocks, or squares, are laid out 400 feet north and south, by 230 feet east and west. The principal workshops and storehouses are each to occupy a whole block, with a quadrangular building of the same exterior dimensions, but having an interior court-yard 100 feet by 270 feet, in which to locate the motive power, and receive and deliver stores.

Special Notices.

Special Notices.

Special Notices.

For Sale.

For Sale, &c.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, March 25, 1874.

The announcement that the House of Representatives, by a large majority, had declared in favor of raising the legal tender circulation to 400,000,000, created a favorable change in the financial markets, and dissipated much of the dullness which has prevailed for many weeks past. The probabilities now are that the Senate will vote the same way, and as there is no reason to suppose that the President will veto the bill, the long uncertainty as to what Congress proposed to do may now be considered at an end. The meeting held in this city last evening, to urge Congress to take some action, turned out to be a disappointment—if not something worse. It was nothing more than a demonstration in favor of contraction ; the resolutions were prepared and printed in advance of the meeting, the speakers were gentlemen known to be altogether committed to the views of those instrumental in getting up the meeting, and what little interest it might have had was destroyed by the fact that the only protest it could utter was against a delay which was at an end, and a measure which was almost certain to become a law. For our own part we hope the Senate will pass the bill at once, and that the President will as promptly sign it. There may be some differences of opinion as to the wisdom of the act, but the business public is, nevertheless, to be congratulated on the fact that the long suspense is over, and that there is still a chance of a revival of commercial activity before the season is over. That we need more currency is a fact which few readers of *The Iron Age* will be disposed to question.

During the week the money market has acquired more firmness, call loans having been 4 @ 6 per cent., and prime mercantile paper 6 @ 7 per cent.

The gold market has been weak and the premium has ranged within narrow limits. The following shows the extreme daily fluctuations :

	Highest.	Lowest.
Thursday	112	111¾
Friday	112	111¾
Saturday	112	111⅝
Monday	111⅞	111⅝
Tuesday	112⅛	112
Wednesday	112⅛	111⅞

The stock market remained heavy until Monday, when it quickened in sympathy with the general improvement, and gained new strength. The principal dealings have been in Lake Shore, Western Union, Pacific Mail, Wabash, Union Pacific and New York Central.

The bond market has been dull, and prices have moved in sympathy with gold. Railway mortgages are stronger.

The aggregate averages of the national banks compare as follows for the past two weeks :

	March 14.	March 21.	Differences.	
Loans	$285,717,100	$285,866,200	Inc.	$149,100
Specie	27,914,300	26,696,000	Dec.	1,218,000
Leg. Ten.	61,652,600	60,184,400	Dec.	1,468,200
Deposits	243,238,500	240,991,100	Dec.	2,247,400
Circ'lation	26,720,900	26,717,300	Dec.	3,600

The following tables show the movements in foreign trade for the week :

IMPORTS.

	1872.	1873.	1874.
Total for week	$8,213,542	$10,997,728	$7,517,103
Prev. reported	81,851,966	88,450,214	80,595,548
Since Jan. 1	$90,065,508	$99,447,942	$88,112,651

Included in the imports of general merchandise for the week are :

	Quant.	Value.
Anvils	170	$1,840
Brass goods	13	2,406
Bronzes	20	2,819
Chains and anchors	232	10,001
Copper		2,228
Cutlery	117	45,446
Guns	270	68,781
Hardware	95	12,556
Iron, hoop, tons	3	241
Iron pig, tons	1,357	47,902
Iron, sheet, tons	19	2,462
R. R. bars	2,706	60,435
Iron cotton ties	508	1,805
Iron, other, tons	78	975
Metal goods	154	18,116
Nails	3	594
Needles	21	13,302
Old metal		1,499
Per caps	6	1,073
Saddlery	21	4,039
Steel	3,169	32,258
Silverware	1	195
Tin, boxes	54,722	475,591
Tin, 3,877 slabs	162,913	38,423
Wire	173	10,991

EXPORTS EXCLUSIVE OF SPECIE.

	1872.	1873.	1874.
For the week	$3,120,757	$5,260,047	$5,413,034
Prev. reported	45,817,232	53,766,562	57,501,948
Since Jan 1	$48,937,989	$59,026,609	$62,914,982

EXPORTS OF SPECIE.

Total for the week	$680,332
Previously reported	6,001,731
Total since January 1, 1874	$6,682,063

Government bonds closed as follows :

	Bid.	Asked
U. S. Currency 6s	117¼	117⅝
U. S. 6s 1881, reg	119¾	120
U. S. 6s, 1881, cou	120⅜	120⅝
U. S. 1862, 5-20 reg	117¼	117¾
U. S. 5-20 1862, cou	117⅜	117⅞
U. S. 5-20 1864, reg	119¼	119⅝
U. S. 5-20 1864, cou	119⅜	119⅞
U. S. 5-20 1865, reg	119¾	120
U. S. 5-20 1865, cou	120⅜	120⅝
U. S. 5-20 1865, reg. new	118⅞	119⅛
U. S. 5-20 1865, cou	119⅝	119⅜
U. S. 5-20 1867, reg	119⅜	119⅞
U. S. 5-20 1867, cou	119⅞	120
U. S. 5-20 1868, reg	119⅜	120
U. S. 5-20 1868, cou	119⅜	120
U. S. 10-40 reg	114⅜	114⅝
U. S. 10-40 cou	114⅝	115
U. S. 5s 1881 reg	115	115⅛
U. S. 5s, 1881 cou	115	115⅛

The following were the highest and lowest prices of stocks to-day :

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	101⅛	100⅝
Lake Shore	80⅜	79⅞
Rock Island	107⅛	105⅞
Wabash	47⅜	45⅝
Western Union Telegraph	82⅛	79⅛
Northwestern	56⅛	54⅞
Do. Preferred	73⅛	72⅛
Milwaukee & St. Paul	44⅝	43
Do. do. Preferred	64⅜	64⅛
Pacific Mail	48⅛	45⅛
Erie	43	42⅞
Ohio & Mississippi	31⅛	30⅝
Union Pacific	35⅜	34⅛
C. C. & Ind. Central	31⅛	31
Atlantic & Pacific Preferred	16⅛	16⅛

GENERAL HARDWARE.

Trade is, we think, in general, good, though we hear a good many complaints, especially of the uneven character of the business, some days being exceedingly busy while others are comparatively dull. There is no doubt, however, that a great many goods have been sold, and many manufacturers are behind their orders. The fires reported below have been the principal topic of conversation in the trade for the past two or three days.

The demand for Foreign Hardware continues fair for the season, and prices, as a rule, are steady, and without change. Although English advices, both letter and cable, confirm previous accounts of general stagnation, especially in the trade for both finished and raw irons, still we are without any positive information concerning the decline which it is natural to expect in heavy goods. The market for Chain is reported weak, but there is little disposition manifested by holders here to shade our quotations.

The latest advices from Sheffield report an advance on the sterling list of 10 per cent. for all Razors of common and medium grades.

Wade & Butcher's and Wostenholm's Razors are unchanged. The following extract from a letter just received by one of the largest importing houses in this city, will explain the condition of the trade in this branch of Sheffield industry: "There is no prospect of these goods being lower, unless all orders cease. In each branch of this trade they are underhanded, consequently the men will have their own prices. The forgers are now about having an advance equal to 20 per cent.; this, in the face of the bad trade, shows how strong the men are. One Sheffield manufacturer reports an order from a New York house for two thousand dozen Razors."

Butchers' Files are in good demand, and are quoted at $5·50 to £, gold.

The market for Nails is without new feature, $4, net, for 10d. is the regular rate for large or small lots. The demand is generally reported active, and fully equal to the same period in former years.

Trade in House-Furnishing Goods, Tinners' Trimmings, &c., shows little, if any, sign of improvement, and although prices are unchanged, there is no doubt but an actual buyer for large lots could obtain important concessions from the published rates.

Smith, Burns & Co, quote their "Excelsior" polished Fry Pans at discount 35 per cent., formerly 20 per cent.

The Hubbard & Curtiss Mfg. Co. have added to their line of Hardware specialties, Bessemer Steel Tire Bolts, which they offer to the trade at discount 50 per cent. from Philadelphia list. They claim for these Bolts that the thread is finer cut than the best Philadelphia Bolts, and that a 3-16 Bolt of Bessemer Steel is stronger than a ¼ in, Bolt made from best Norway Iron, which should commend them to builders of light wagons. They are put up in strong card boxes, 100 in each box.

Sargent & Co. have decided to remain in their present quarters, 70 Beekman street, for at least a year longer. They have issued a Bulletin which contains the following changes, beside a number previously published by us. It will be noticed that the prices of a number of important goods have been reduced. The regular 10 per cent. cash discount applies to all these prices :

Page in 1874 Catalogue. New discount.
18, Bolts, Nos. 300, 320 and 332 .60
19, " Nos. 350, 360, 362 and 363 .60
68, French Window Catches (whole page) .60
80, House Bells on Carriages .70
Change the Nos. of above by prefixing 1 to the present numbers, making new numbers 112, 113, 114 and 122, 123, 124.
81, Check Springs, Change list of No. 15 to $16·50, and make all Check Springs .60
81, Mortise Cranks, Change list of No. 0 to $45·00, and make all Mortise Cranks .60
82, Side Bell Cranks, Change list of No. 4 to $14·50 .50
83, End Bell Cranks, Change list of No. 5 to $12 50 .50
85, Berlin Bed. Door Handles, Change list .50

Nos	21	22	23
Per doz	$3·20	3·30	3·50

87, Roggin's Latches, No. 30 and 32 .60
89, Store Door Handles, No. 6 .65
92, " " No. 7 .70
93, " " No. 17 .65
94, " " No. 27 .65
99, " " No. 307 .70
100, " " No. 417 .65
120, 121, Extra Keys (Nickel Plated) for Store Door Handles, Nos. 235 and 435 .....25 cts. each, net
147, Chest Handles .65
155-162, Coat and Hat Hooks .60
162, Hat Rack Hooks .60
163, Coat and Hat Hooks .60
164, 165, Hotel or School House Hooks .60
165-175, Coat and Hat Hooks .60
176, Brass Hat Hooks .60
177, Brass Surplice Pins .60
178-181, Wardrobe Hooks .60
181, Cast Screw Hat Hooks .60
181, Wrought Screw Hat Hooks .60
182, 183, Ceiling Hooks .60
184, Store Rack Hooks .60
185, Harness Hooks .60
186, Clothes Line Hooks .60
192, 193, Hooks and Eyes .60
222, Japanned Shutter Bars .60
223, Shutter Bars, whole page .60
225, Shutter Bars, Nos. 11, 12 and 21 .60
" " No. 22 .60&5
227, " No. 71 .60
" " Nos. 72, 73 .65
230, 231, Porcelain Shutter Knobs .50
232, Porcelain Picture Knobs .50

Nos	22	22	31	32
	$4·00	4·80	4·40	5·25

232, Porcelain Drawer Knobs .50

Inch	1	1⅛	1¼	1½	2
No. 5	$6·15	7·10	8·15	9·15	9·90
No. 7	$4·75	5·85	6·90	7·80	8·70

233, No. 8, Stove Knobs .50

Inch	1	1⅛	1¼	1½
	$4·75	5·25	5·85	6·90

251-254, Shelf Brackets .50&10
255, " No. 44 .50&10
" No. 48, Heavy .60
255-259, Fancy Shelf Brackets .65
266, No. 65, Wrought Gate Latches .60&10
273, Barn Door Hangers .60
273, " Rollers .60
273, " Rail .60
274, " Hangers, N. E. Pattern .60
275, " Rail for N. E. Hangers .60

Inch	⅝	¾	1	1⅛	1¼	1⅜	1½	2
No. 1	$3·70	3·70	4·50	5·00	5·80	6·80	7·60	8·60
No. 10	$2·90	3·00	4·00	4·50	5·00	5·85	7·00	7·65
No. 15	$3·00	3·10	4·10	4·60	5·10	6·00	7·15	7·80
No. 20	$3·75	3·90	4·90	5·40	6·00	6·90	8·10	8·75
No. 30		4·75	5·20	6·35	7·00			

293, No. 88, Hook and Eye Hinges .50&10

Inch	⅛	⅜	¾
Per doz. pairs	$4·75	7·25	10·25

295, Hinge Nails and Rivets .60&10
295, Wagon Nails .60&10
296, No. 5, Wrought Staples .60&10
296, No. 10, " Hooks and Staples .60&10
297, Hasps and Staples (whole page) .60&10
298, " " No. 40 .60&10
298, Trap Door Rings, Nos. 50 and 55 .60&10
299, Open Links .70
299, S Hooks .70
300, Wrought Meat Hooks .60&10
302, No. 10, Hitching Hooks and Rings .60&10
302, No. 15, Hitching Rings .60&20
302, Wrought Iron Washers .65
304, Corner Irons .60&10
305, No. 72, Box Chisels .60&10
309, " Bench Screws .60
313, Sargent's Pat. Grindstone Fixtures, Change list of No. 43 to $18·00, and make all .65
326, Carriage Knobs .60
376, Brass Thread Escutcheons .60
384, Plate Casters, Change list of Porcelain Wheel as follows .33⅓

Nos	11	12	13	14	15	16	17
Per set	$0·12	·13	·15	·18	·20	·24	·28
Nos	211	212	213	214	215	216	217
Per set	$0·12	·13	·15	·18	·20	·24	·28

385, Plate Casters .33⅓
386, Shallow Socket Casters .33⅓
386, Deep Socket Casters (no change) .20
387, Piano Forte Casters .33⅓
387, Casters for Iron Bedsteads .33⅓
388, 389, Bed Casters (no change) .30
390, 391, Bed Casters, Globe and Bracket .33⅓

We lately mentioned that the Ausable Nail Company were making an earnest effort to prevent the cutting of their prices by jobbers. That they are taking strong measures, will be seen by the following blank letter which they have had printed, and the intent of which will be fully apparent to the reader :

NEW YORK, ... 187

Gentlemen :—We have been obliged to decline orders for Ausable Horse Nails from........of ..... having become satisfied that ......ha... repeatedly undersold our regular rates, and shall continue to withhold ...... supply until ...... give us assurances that ...... will conform to our current prices.

Expecting the co-operation of the trade in our efforts to sustain prices, we have to request that you will not, under any circumstances, fill ...... orders for Ausable Nails. We shall not hesitate to decline orders from parties who supply those (after notification by us) whom we have cut off in consequence of a violation of our terms and rules.

AUSABLE HORSE NAIL CO.
ABRAHAM BUSSING, Secretary.

The Hart, Bliven & Mead Manufacturing Co. make this day the following changes in their discounts, nearly, if not quite, all being reductions :

Page. Discount per cent.
15, Wrought Iron Bench Screws, Change list, 1¼ in, $20·50 .60
18, Japanned Barrel, Tower and Shutter Bolts .60
19, " Square Spring and Necked Bolts .60
19, " Lever Bolts .50
24, Cast Brass Straight Cupboard Bolts .60
27, Flat Cupboard Bolts .60
38, French Window Catches, Nos. 307 to 314 .60
38, " " Nos. 302 to 306 .50
45 to 49, Wardrobe, Hat and Coat, Ceiling, School House, Clothes Line, and Harness Hooks 60&5
66, Barn Door Rollers .60&10
67, New Pattern Barn Door Hangers .60
67, Extra Heavy " " .60&10
67, New England " " .65
68, Barn Door Rail, Nos. 0, 1 and 2 .60&5
68, " " Nos. 3, 4 and 5 .60&7½
72, Axle Pulleys, Nos. 5, 10, 15 and 20 .60&10
72, " Nos. 25 to 45 .60
84, New York Pattern Shutter Bars, Brass .60
84, " " " Silver Plated .65
99, Pittsburgh Thumb Latches, No. 100 .60
101, Oblique Store Door Handles, No. 10 .60
101, " " No. 20 .60
101, " " No. 30 .65
102, Fig'd Enameled Store Door Handles, No. 180 .65
103, Bronze Metal " " No. 70 .60
103, Figured Enameled " " No. 80 .70
106, Japanned Surface Chest Handles .65
109, Brass Thread Escutcheons .60
110, Bedstead Fastenings .60&10
111, Iron Plate Casters .33⅓
111, Porcelain Wheel Plate Casters .40
111, Brass " " .33⅓
111, Piano Casters .33⅓
112, Bed Casters, all kinds .30
113, Globe Wheel Bed Casters .33⅓
114, Bracket Bed Casters .33⅓
114, Round Shallow Socket Casters .33⅓
120, Grindstone Fixtures, Nos. 4 to 11 .60
127, House Bells on Carriages .70
127, Mortise Bell Cranks .55
175, Boring Machine, Hovey's or Douglass, Upright, without Augers $3·50, net.
175, Boring Machine, Hovey's or Douglass, Angular, without Augers 4·50 net.
175, Boring Machine, Hovey's or Douglass, Upright, complete 5·75, net.
175, Boring Machine, Hovey's or Douglass, Angular, complete 6·75, net.
176, Cook's Cast Steel Augers 50 %
182, Gimlet Bits 10&10 %
185, Barber's Braces 40&5 %
Change list, No. 22, $14·00 ; 23, $13·00 ; 40&5 %
186, Barber's Braces 40&5 %
192, Weston Bench Hooks 15 %
193, Carpenter's Clamp Heads, change list 20 %

Single Nut	1	1⅛	1¼	1½
	$15·00	18·75	21·25	31·00
Double Nut		1	1⅛	1¼
		$18·75	22·50	27·50

201, Patent Screw Zinc Oilers 30 %
201, " " Brass and Copper Oilers 25 %
216, Johnson's Plumbs and Levels 60&10 %
Change list, No. 119, $32·00 ; 122, $27·00.
253, Magnetic Tack Hammers, Change list 20&10

Nos	1	2	3
	$1·50	2·00	2·25

256, Simmons' Broad Axes, Change list all patterns, $30·00 .15
262, Ives' Volute Bung Borers .10&10
271, Trenton Parallel Vises .15
271, Solid Box Vises, 30 to 100 lbs. per lb. 15 cts., net.
272, " Swivel " .15
272, " Coachmakers' Vises .15
273, Wilson's Bench Vises, Change list .30

Nos	00	0	1	2	3	4
	$2·15	2·70	3·60	4·65	6·70	9·65

274, Jack Screws, Revised List net.
275, Geared Braces, Change List .10
Japanned Wheel, $13. Polished Wheel, $15.
275, Breast Drills, Change List, $21·00 .10
281, Caulking Irons, Change List .20

Steel Points Polished.

Crease	0	1	2	3
Per doz	$4·60	4·80	5·00	5·20

Cast Steel.

Crease	0	1	2	3
Per doz	$8·00	8·25	8·50	9·00

291, Taft's Screw Wrenches .70
291, Genuine Coe's Screw Wrenches .40&5
291, Imitation " " .60&10
296, Corn Knives, Change List .30

Nos	1	2	3	4
	$7·00	6·50	6·00	7·00

297, Grass and Grain Scythes, Revised list .30
298, Bush Scythes, Revised list .30
298, Indian Pond Scythe Stones net
327, Ox-Bow Pins .50&5
327, Bull Rings .50&5
329, Wrought Iron Barrel Bolts, Iron Knob, Change list .50&10

3	4	5	6	8
$2·05	2·35	2·80	3·30	6·00

329, Wrought Iron Bbl. Bolts, Tinn'd Knob, Change list .50&10

3	4	5	6	8
$2·15	2·45	3·00	3·40	6·50

329, Wrought Iron Bbl. Bolts, Brass Knob, Change list .50&10

3	4	5	6	8
$2·25	2·60	3·15	3·60	6·75

329, Wrought Iron Square Spring Bolts, Change list .50&10

4	5	6	7	8	9	10	12
$2·50	2·65	2·85	3·75	4·00	4·35	6·00	6·35

329, Wrought Iron Square Spring Bolts, Extra Heavy, Change list .50&10

4	5	6	7	8	9
$3·25	3·40	3·60	4·75	5·75	6·00

330, Wrought Iron Store Door Bolts, Change list .50&10

8	12	14
$8·00	8·75	9·75

333, Wrought Gate Latches complete .60&5
" " " only .40&10
333, Hinge Nails and Rivets .60, 10&10
333, Wagon Nails .60, 10&10
334, Wrought Staples .60, 10&10
334, " Hooks and Staples .60, 10&10
335, " Hasps " .60, 10&10
335, " " Hooks and Staples .60, 10&10
336, " Bent Hasps and Staples .60, 10&10
326, " Meat Hooks .60, 10&10
336, " S Hooks .70&10
337, Wrought Lap Links .70&10
340, Brass and Porcelain Head Picture Nails .40
340, Picture Nails, Nos. 50 to 60 .25&10
344, Round Head Brass Cap'd Screws .33⅓&10
344, Flat " " " .50&10
345, Round " Silv'd " .30
345, Flat " " " .30&10
346, Narrow F. J. Cast Butts .50
346, Broad " " " .40&10
347, Loose Joint " " .60
348, Mayer's Hinges .50
348, Parliament Butts .50
353, Narrow F. J. Wrought Butts .30
353, Broad F. J. and L. J. " .35
354, Table Butts, Back Flaps and Blind Butts .30
356, Wrought Brass Butts .30
359, Shepard's Blind Hinges .40&10
361, Washburn's Blind Fasts, change list $15·50 per gross .10
364, Wrought Trap Door Rings and Staples .60, 10&10
364, " " Rings only .60, 10&10
412, Wilmot Base Knobs .40&10
417, Philadelphia Tire Bolts .50&10
418, " Carriage Bolts .50&10
422, Sheet Brass, reduce printed list 6 cents.
423, Brass and Copper Wire to No. 25, reduce printed list 8 cents per lb.
423, Brass and Copper Wire, No. 26 to 38, Reduce printed list 6 cts. per lb. add 10
431, Lining Nails .33⅓&10
435, Iron Jack Chain .45&10
435, Brass " .35&10
450, Enameled or Tinned Glue Pots .10
465, Increase Wilson's Coffee Mills, Change list .15

No	0	1	2	3	4	5
	$3·25	4·25	2·25	6·75	10·50	18·00

466, Box Coffee Mills, Change list .15

No	25	35	40	45
	$10·50	12·50	11·50	13·50

470, Peerless Fluting Machines net
470, Knox " .5
475, Silvered Glass Curtain Pins .45&10
504, Cork Lined Faucets .60
504, " " by the Barrel .60&7½
512, Seymour's Sheep Shears .25
527, Lothrop's Butcher Skinning and Sticking Knives .25
527, Ames' Cook and Hunting Knives .20
527, " Bread and Kitchen " .15
537, Britannia Spoons .45
538, " " .45
541, German Slate Pencils .10
541, American Soap Stone Slate Pencils net
544, Brass Hand Bells .65&10
545, Texas Cow Bells .20&10

APPENDIX NO. 1.

24 to 27, Hat and Coat Hooks .60&5
53, Carriage Knobs .60&10

J. Clark Wilson & Co. have added to their line of Mechanics Tools a well finished Solid Cast Steel Socket Scratch Awl, which is the neatest and best finished tool of its kind we have seen. The list price is $1·50 per dozen.

We mentioned in our last issue that Hogan, Clarke & Sleeper had received their new catalogue and price list, and promised to review it more fully. We have received a copy of the book, which contains a good deal of matter of great value to the trade. Among the lists we notice the following: Revised sterling list of Files, showing the value in currency from $5 to $8 to £. List of Lamson & Goodnow Mfg. Co.'s Table Cutlery, etc. A comparative list of Locks, Latches, etc., showing the Locks, etc. of the different manufacturers that correspond with the goods of the Norwich Lock Co., for whom they are agents. The book contains a great number of important lists, which our space prevents us enumerating.

George B. Walbridge has taken the agency of the Derby Silver Company, manufacturers of Plated Spoons, Forks, Knives, German Silver Spoons, &c.

The manufacturers who last week advanced Loose Pin Butts, have not adhered to their new prices, and prices are again unsettled.

The G. W. Maguire Brush Company are preparing a new price list of their goods. This company are behind their orders, and are working every night.

We invite the attention of the trade to the advertisement, on page 36, of Pugsley & Chapman, No. 6 Gold street, manufacturers of Wheelbarrows, &c., and agents for the American Lock Co.'s Locks. Their Wheelbarrows and Trucks are admirably adapted for shipping, as they are so constructed that they can be packed in small compass. They are made of the best materials, and will compare favorably with any goods of their class in the market. In addition to the goods mentioned above, P. & C. represent a Shovel Mfg. Co., a Nail and Tack Co., and several desirable Hardware specialties.

George N. Stearns & Co., Syracuse, N. Y., have just issued an illustrated catalogue of the goods of their manufacture. Among the new goods which they offer to the trade we notice "Stearns' Patent Expansion Steel Hollow Auger," No. 2. It is made entirely of steel, and combines all sizes from ⅝ to 1 inch. It is adjusted with a conical nut and set screw. The knife is held by one screw, and need not be changed in adjusting the size. The manufacturers express the assurance that it is the most perfect Hollow Auger made. On page 12 of the catalogue they illustrate "Stearns' Patent Adjustable Saw Vise," No. 2, which is in many respects similar to their Saw Vise No. 1, with which the trade are already familiar. It is a larger tool, and is calculated to meet the wants of saw filers and mechanics who require a stationary or larger Vise than the No. 1. The Hubbard & Curtiss Mfg. Co., No. 82 Chambers street, are sole agents for these goods in this city, as will be seen by the following circular, dated 10th instant:

Having appointed the Hubbard & Curtiss Mfg. Co. my sole agents in New York city for the sale of goods manufactured under my patents, they will hereafter supply the trade at the same prices now offered by me. I shall continue to hold myself responsible to the trade for the quality and finish of these goods. I am personally superintending their manufacture, and hope to merit for them the continued confidence of the trade. Very respecfully,
G. N. STEARNS.

The following is their condensed list and discount sheet:

	₩ doz.	Dis. ₩ cent.
Stearns' No. 1 Hol. Augurs	$48·00	25
" No. 2 "	48·00	25
Stearns' Spoke Pointers	10·00	20
Skinner's Bench Hooks	8·00	30
Stearns' Iron Spoke Shave	6·00	25
" " 2 "	10·00	25
" " Spoke Shaves	15·00	20
Body Makers' Clamp.		
5 inch, per doz	9·00	25
4 " "	12·00	25
9 " "	15·00	25
Breast Drills.		
No. 1, per doz	40·00	25
No. 2, "	48·00	25
Wheeler's Patent Countersink Plane	4·00	20
" " " with gauge	5·00	20
Stearns' No. 1 Saw Vise	24·00	30
" No. 2 "	36·00	30
Drill Chucks.		
No. 3	8·00 each	
No. 3, with extra jaws	10·00 "	
No. 4	10·00 "	
No. 4, with extra jaws	12·50 "	
Scandinavian Pad Locks.		
Nos. 9 and 9½	10·50	15
Nos. 10 and 10½	12·00	15
Nos. 11 and 11½	15·00	15
Nos. 12 and 12½	18·00	20
Nos. 13 and 13½	22·00	20
Iron Pad Locks.		
No. 600	6·00	20
No. 602	8·00	20
No. 603	8·50	20
Brass Pad Locks.		
No. 625	14·00	25
No. 626	15·00	25
No. 630	8·00	25
No. 631	12·00	25
Stearns' Horse Hay Fork ... each,	12·00	25
Eureka Line Holders ... per gro.	15·00	20

The very extensive Table Cutlery Works of Landers, Frary & Clark, in New Britain, were totally destroyed by fire on Monday last, the flames breaking out at about 10 o'clock, a. m., in the attic—where knife handles were finished—of the main brick building. The wind was blowing almost a gale from the northwest at the time, which caused the fire to spread with great rapidity, and every effort of the fire department was baffled. The firemen could do nothing—the heat drove them off. In forty-five minutes from the first discovery, the last floor fell in. A hose was attached to a hydrant in the yard. In a few minutes the hose burned off within five feet of the hydrant. The heat was so intolerable that it was impossible for men to rush in and shut off the hydrant, consequently a great deal of water force was lost. There were two outside hydrants within fifty feet of the shop, but there was no force to the water.

The origin of the fire is unknown, but there is little doubt that the cause was either spontaneous combustion or the work of incendiaries. As the room was unoccupied, the opinion seems to prevail that it must have been incendiarism. At one time, owing to the fierce gale, it was thought that the whole town would be destroyed, but fortunately the direction of the wind changed, and this was the only thing that saved from destruction other large establishments and a large number of dwelling houses in the eastern part of the city, where it is thickly settled. As it was, the Union Mfg. Co.'s Works, the Stanley Rule and Level Co.'s Works, and the White Lead Works, caught fire several times, and but for the strenuous efforts of the employes in the various factories, who were on the roofs with buckets and pails of water putting out the fire as soon as it appeared, they would have been destroyed.

The total loss is variously estimated at from $500,000 to $800,000, with an insurance in the following named companies for the amounts given:

ON BRICK SHOP.

Connecticut Companies.	
Ætna, Hartford	$12,500
Hartford, Hartf'd	10,000
Phœnix, Hartford	10,000
National, Hartf'd.	5,000
Orient, Hartford.	5,000
Conn., Hartford	2,500
Atlas, Hartford	2,500
People's, Middletown	5,000
Fairfield Co., Norwalk	2,500
Total	$55,000
Massachusetts Companies	
Spr'gfield, Sp'ngfield, Mass	$5,000
Faneuil Hall, Boston	5,000
Total	$10,000
New York Companies.	
Home	$10,000
Phœnix	7,500
Continental	7,500
German Amer	7,500
Clinton	5,000
Exchange	5,000
American	5,000
New York	5,000
Mercantile	5,000
National	5,000
Mechanics' and Traders'	5,000
Safeguard	5,000
Commerce	5,000
Tradesmen	5,000
Lorillard	5,000
Irving	5,000
Star	5,000
Standard	5,000
New York and Yonkers	5,000
Manhattan	5,000
Atlantic	5,000
Hoffman	5,000
Republic	5,000
Hanover	5,000
Germania	5,000
Niagara	5,000
Citizens'	5,000
Black River (Watertown)	5,000
Ætna	2,500
Farragut	2,500
Empire City	2,500
Guardian	2,500
Firemen's Friend	2,500
Relief	2,500
Resolute	2,500
Adriatic	2,500
Commercial	2,500
Brewers' and Malsters'	2,500
Lenox	2,500
Arctic	2,500
Lamar	3,000
Total	$185,500
Penna. Companies.	
Ins. Co. of North America	$7,500
Fire Association	7,500
Franklin	5,000
Fame	5,000
Penn	5,000
National	2,500
Pennsylvania	2,500
German (Erie)	5,000
Lycoming (Muncy)	5,000
Alemania (Pittsburgh)	2,500
Total	$47,500
Rhode Island Companies.	
Narragansett	$5,000
Equitable	5,000
Providence W'shington	5,000
Atlantic	5,000
Roger Williams	5,000
Merchan's'	2,500
Newport	2,500
Total	$30,000
New Jersey Companies.	
Citizens', Newark	$2,500
Merchants', Newark	2,500
People's, Newark	2,500
Humboldt, Newark	2,500
Total	$10,000
Western Companies.	
Home, Columbus, Ohio	$5,000
St. Paul, Minnesota	5,000
Traders, Chicago	5,000
American Central, St. Louis	5,000
Firemens' Fund, California	5,000
Northwestern, Milwaukee	2,500
Total	$27,500
Foreign Companies	
Queens, London	$15,000
Royal, London	12,500
North British	12,500
Scottish Commer.	7,500
Commercial Union	7,500
Liverpool, London & Globe	6,000
Imperial	6,000
London Assurance	5,000
Total	$72,000

FRAME BUILDING.

Liverpool, London & Globe	$5,000
German American, New York	5,000
Meriden, Meriden Connecticut	3,500
Fairfield Co., Norwalk	3,000
Globe, Chicago	2,500
Allemania, Cleveland	2,000
Citizens, St. Louis	2,000
Franklin, Pennsylvania	1,500
Pennsylvania Underwriters	1,500
	$26,000

RECAPITULATION.

Brick Building.

Connecticut Companies	$ 55,000
Massachusetts Companies	10,000
New York Companies	185,500
Pennsylvania Companies	47,500
Rhode Island Companies	30,000

New Jersey Companies	10,000
Western Companies	27,500
English Companies	72,000
	$437,500

Frame Building.

Total of nine companies	$ 26,000
Whole insurance	$463,500

Landers, Frary & Clark were running full time and were producing a greater quantity of goods than ever before. They were full of orders, and would have manufactured and shipped 1000 gross of Cutlery had it not been for this disaster. They inform us that the works will be rebuilt immediately on a more extensive scale than before. Buildings and machinery will be crowded night and day, and they expect to have the works running full blast by July 1st. They have also prepared the following circular to be issued to the Hardware trade:

NEW BRITAIN, CONN., March 23, 1874.

To the Trade: The Ætna Works were totally destroyed by fire this morning. They will be rebuilt at once, and we shall be prepared with a new and complete line of goods in ample season for the fall trade. We hope by promptness and energy to command the same cordial support in the future that we have received in the past. Please bear in mind that our Hardware works are uninjured, and all orders will receive prompt attention. Respectfully,

LANDERS, FRARY & CLARK.
C. S. LANDERS, Treas.

The works of the Plants Mfg. Co., at Plantsville, Conn., were totally destroyed by fire yesterday (Tuesday). The following particulars are taken from the *Herald* report:

The fire broke out in the machine shops at one o'clock, and in less than two hours the entire cluster of building, many of them frame, had burned to the ground. The alarm of fire was promptly answered by the villagers, who, in the absence of engines or fire apparatus of any sort, were powerless to contend with the devouring element. Buckets of water alone could be used, and these, with a terrible wind blowing, were as nothing to stay the progress of the flames, which were carried across the river, at the rear of the factory, endangering many dwellings there. The factory, its valuable machinery, a large quantity of manufactured goods and a heavy stock of raw material were consumed.

The total loss will not fall short of $90,000, on which there are insurances in Connecticut, Massachusetts and New York companies amounting to $60,000. The exact figures cannot at present be obtained, as the policies were in the office safe, which is, of course, among the ruins. Fifty men are thrown out of employment by this fire. The telegraph office and railroad depot, which were in the building, are, of course, destroyed.

The company's capital stock was $50,000, owned mostly in the village, the two brothers Plant being the heaviest owners. The company has been unfortunate in the matter of fires, this being the third time that they have been burned out. From the fact that the company's night watchman passed through the building at twelve o'clock and discovered no signs of fire then, the conclusion is that the fire was incendiary.

Our readers will probably read with interest the following extract from a late Burlington (Vt.) paper, which fully explains itself:

MR. SPRAGUE AND THE HOWE SCALE AT THE MACON FAIR.

Our readers will remember the charge brought against Hon. N. T. Sprague, Jr., of Brandon, by the Springfield *Union*, a month or more ago, of commending his scales to Southern popularity by decking them with photographs of rebel generals, and by other means not very congenial to the feelings of most Vermonters. We expressed disbelief of the story at the time. The things objected to by the *Union* prove to have been not the acts of Col. Sprague—not of his agents even—but of the agents of his New York agents.

Mr. Sprague at once addressed a letter to his New York agent, in which he said that he found himself taken to task for their acts or the acts of their agents, and added: "As I am innocent personally, in fact had no knowledge at all of 'rebel generals' photographs adorning our scales,' and this hour is the first time I ever knew that 'a dinner was ever given to our hoped for customers,' &c., in Macon or any other Southern city or town, it is no more than right that you should, *through the same organ*, place me right before the people."

As a result of this appeal, Messrs. Johnson & Dunlap addressed to the *Union* the following letter, a copy of which has been forwarded to us for publication:

MACON, GA., Feb. 25, 1874.

Editors Springfield Union:

Our attention has been drawn to your weekly edition of the 6th inst., wherein you editorially assail Mr. N. T. Sprague, Jr., as a "doughface," on the representations of a letter written in Macon, signed "Vt.," the allegations of which you editorially sum up in the following paragraph:

"The story is that N. T. Sprague, Jr., of Brandon, at the State fair in Georgia last fall, in order to commend Howe's scales to Southern appreciation, adorned them with photographs of rebel generals, and his agent, Maj. Sproul, gave a dinner to his hoped-for customers, where the memory of those same generals was toasted. It is to be hoped such prostration before Southern sentiment resulted in a good trade. Any man who can get down as low as that ought to make money, for it is very certain he could make nothing else. Least of all will it be likely to make votes for him among the Republicans, and particularly among the soldiers of Vermont. A man who professes one thing at home in the North and another at the South, is hardly the man to be made Governor, at least within ten years of the close of the war."

It seems Mr. Sprague has been talked about as a candidate for Governor of Vermont, and also that he is a good, loyal Republican. We never saw him, but we have been selling his scales, and they obtained a premium at the Georgia State Fair in Macon, where they were exhibited, arranged and decorated as we thought proper. As our exhibition was our own and not Mr. Sprague's, the question we submit to your sagacity is this: Has a man in Massachusetts the right to exhibit and arrange his own goods to suit himself? If we had sent Mr. Sprague's scales to Vienna, and put them under an Austrian flag, would that have made an Austrian, as well as a "doughface," out of him?

It is true Maj. Sproul (Sprague's general agent) was in Macon at the time, but he had no control over our exhibition. It is also true that, gratified by the success in securing a premium for the scales, Maj. Sproul gave a collation ten days after the decision relative to the premium, and allowed us to invite guests, but it is quite untrue that Maj. Sproul was responsible for any of their opinions or utterances, any more than we are for your judgment that facts which Mr. Sprague knew nothing about and over which he had no control, make him in your refined phraseology a "doughface."

We may add in conclusion the hope that if your spotless loyalty should ever permit you to visit any Southern home, the fact that every one of them is adorned with some "rebel picture" will not restrain you from partaking of our hospitality for fear of "death in the pot." We assure you a scale will weigh, and a chicken will taste just as well under a picture of Lee as it will under one of Butler, and though your neighbors might call you a "doughface" for eating in presence of Lee's picture, yet better have dough in your face than an empty belly and so much sap in your brains.

Respectfully, JOHNSON & DUNLAP.

This letter, though perhaps not a model of good taste and temper in all its parts, covers fully the points at issue. Having never doubted Mr. Sprague's loyalty and patriotism, we did not need this refutation of the *Union's* story. If any did, the correction must be accepted by them as ample, and the *Union*, if it has not already done so, should give the truth as wide a circulation as it did to the falsity.

IRON.

American Pig.—The market remains as last reported. The principal companies still adhere to their refusal either to shade quotations for present delivery or to contract at these prices for season delivery. Companies not so favorably known, however, are shading our prices. The demand continues very small, and stocks are accumulating, notwithstanding the large decrease of production. The uncertainty in business circles makes consumers indisposed to buy more than enough to supply their present needs, while the apprehension of labor troubles makes the furnace companies unwilling to enter into long engagements. We quote Foundry No. 1, $35 @ $36; Foundry No. 2, $33 @ $34; Gray Forge, $29 @ $31.

Scotch Pig.—The market continues very dull, and prices have been unsettled by the advices from the other side. We quote Eglinton $37 @ $37·50; Coltness, $40 @ $41; Glengarnock, nominal at $39 @ $40.

Bar.—No change in quotations of Refined Bars, the fair average of sales being still from 3 to 3·2 cts. per pound, with a few large mills refusing to sell at less than 3¼ to 3·3. A slightly better feeling is observable in the market, which, it is hoped, will not prove temporary. It is currently reported that a Russian railway company have closed a contract with one of our locomotive manufacturing companies for 75 locomotives, to be delivered during this year.

Rails.—The Rail market presents no new feature. The extreme dullness which has characterized it for the past six months continues without improvement. Many of the Rails here are not pressed for sale, while other lots, especially of sections not in general demand, have been quoted at very low figures. We note the offer last week of a lot at $50, gold. We quote, American, $59 @ $60, at works.

Old Rails.—We quote Ts, without change, $40 @ $41.

Scrap.—Wrought Scrap, from yard, may be quoted $41 @ $42, for No. 1.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

WEDNESDAY, March 25, 1874.

Scotch Pig.—The market is dull. Demand is small and prices declining. The amount of business is fair. The following are makers' prices:

Coltness, No. 1	98/
Gartsherrie, No. 1	96/
Glengarnock, No. 1	94/
Eglinton, No. 1	89/

Manufactured Iron.—The market is very dull. There is no demand, and prices are weak. We quote Best Staffordshire Bars, £11 @ £13.

Rails.—There is little change in the Rail market. We quote Welsh £9. 5/ @ £10. 5/.

Strikes.—Innumerable strikes are taking place.

METALS.

Copper.—The stronger feeling alluded to in our last report has resulted in larger sales since, 1,250,000 pounds Lake and Tennessee changing hands, bought on speculation at between 24c. @ 24½c., cash. The stock being a limited one, and not to be increased from domestic source till May next, 24⅝c. has been bid in vain since. Being well concentrated in firm hands the article is held now at 25c. The consumptive demand is springing up with greater vigor since, there being numerous consumers in the city and vicinity who have no supply on hand, and are now induced to purchase their requirements. Yesterday's telegraphic accounts from London report Best Selected £88, and Chili Bars £77, the latter a decline of one pound sterling. The visible supply in Europe on the 1st instant was 34,580 tons, against 41,909 last year, and 29,647 in 1872. By mail from London, March 7th, the accounts were firmer, Best Selected £88 @ £90. Manufactures of Copper have been steady as follows: Copper Bolts, 35c.; Sheating (over 12 oz.), 33c.; Braziers (over 16 oz.), 35c. Yellow Metal also well supported at 24c. per pound for Sheating, and 30c. per pound for Bolts.

Tin.—The market has been moderately active, with sales of a couple of thousand slabs of Straits at 24 @ 24½c., gold, now held at 24½c.; to arrive it can be had at 24c., due in April. English L and F we quote 21½ @ 22c., on the spot, and 21½c. to arrive and for shipment; English Refined, with sales, at 23c. on the spot, and 22½c. for prompt shipment from England. Billiton nominally 24 @ 24½c., and Banca, 27½ @ 28c., all gold. The market keeps remarkably steady. Stocks, as compared with former years, are light, but still ample enough for present wants. The Dutch sale took place at Amsterdam to-day, 19,400 slabs Banca and 3100 Billiton being sold. One private despatch reports 54 guilders as the average, another 55 guilders, but the former figure of fifty-four (the 50 kilos) is believed to be the correct one. By mail, March 7, the latest quotation was 62 guilders for Banca and 61 for Billiton. The decline of 8 guilders in 18 days is a heavy one, but it has taken nobody by surprise, after what had taken place at London, where Straits Tin went as low as £94, reported £95 to-day. Hence, the result of the Dutch sale has not weakened our own market; on the contrary, the feeling is one of firmness and confidence. The principal causes of the great decline we gave editorially on the 5th instant. The Australian over-supply seems mainly to have opened vistas of flooding the English market, hence the demoralization. Should the strikes in England extend to Tin Plate manufacture, Block Tin would go still lower, while Tin Plates here would rise. The latest cable report of Coke Tin Plate quotations names 27/, another giving way of 2/. Great depression has been noticeable at New York, with sales of 200 boxes I. C. W. Coke Tin at a price not transpired. We nominally quote, gold: I. C. Charcoal, $10·50 @ $10·75,; I. C. Coke, $7·75 @ $8·25; Coke Terne, $6·75 @ $8, and Charcoal Terne $9 @ $9·75.

Lead.—Some business has been done in domestic at 6⅛c. @ 6¼c., gold; it can be had at 6⅛c. to-day. There has been little inquiry for foreign Lead, and if forced on the market it would not bring above 6¼c. Foreign selected Lead nominally 7¼c., gold. Thus the tendency is a weak one here, and, we are telegraphically informed, it is equally so in London. There were rumors in town that dispatches were to hand from that city, reporting rather more extensive dealings in foreign Lead, but we do not find them confirmed through other channels likely to be speedily informed if there were any fresh movement on foot. Lead is not a speculative metal, yet it may be unduly depressed by passing untoward circumstances, as has lately been the case in Europe, and invite consumers to anticipate rather more largely future requirements. Bar, 8½c.; Pipe and Sheet, 9c.; Tin Lined Pipe, 16½c., less 10 per cent. to the trade.

Spelter and Zinc.—The market for Spelter is nominally unchanged. Domestic favorite brands are still quoted 7¼c. @ 7½c., currency. A considerable business therein has been done within these figures; yet the metal lacks strength, and we think it could easily be obtained at 7⅛c., currency, now. Of Foreign, 80 tons Silesian sold between 6½c. and 6⅝c., gold, which is a decline, and good brands are now offering at this figure. Stocks on the spot are light, and there is little to arrive. The market closes with tolerable steadiness. Sheet Zinc is quiet at 8⅝c., gold, Mosselmann, and 8¼c., gold, other brands.

Antimony.—The demand for this metal is quite limited at 12¼c. @ 12⅝c., gold.

COAL.

The dealers in Coal complain that business is not as brisk as it ought to be at this season of the year. Prices of Anthracite are the same as quoted in our last report, but next week being the season for April delivery, there will be an advance of 5 cents. Trade in general does not open as lively as it did last year.

The monthly sale of Scranton Coal was held yesterday by John H. Draper & Co. The attendance was good, and the bidding lively. The steamboat, grate and egg were disposed of rapidly. The following are the prices as compared with those of the last sale:

	Tons.	February.	March.
Steamboat	2,000	$4·50 @ 4·55	$4·50 @ —
Grate	15,000	4·50 @ 4·60	4·60 @ —
Egg	6,000	4·72½ @ 4·75	4·82½ @ —
Stove	25,000	5·17½ @ 5·20	5·22½ @ 5·30
Chestnut	7,000	4·17½ @ 4·20	4·22½ @ 4·25

The average decrease on steamboat Coal was 2¼ cents per ton. On the remaining lots there was an advance, the average increase on grate being 2½ cents; egg, 9 cents; stove, 7½ cents; and chestnut, 4¾ cents.

The market for Bituminous Coal is very dull, and there is no change to report, although some dealers are lowering their prices in the hope of inviting trade.

The quotations for Anthracite are $5 @ $6 by the cargo, and for gas coals the rates are: West Virginia, $8·50; Cumberland, soft, $6·75 @ $7·25 per ton.

The demand for foreign is still very limited, and the quotations are as follows: Liverpool House Cannel, $20; Liverpool Gas, $11; Newcastle Gas, $9; Scotch, $11.

The coal transported over the Cumberland Branch Railroad during the week ending March 21st, 1874, amounted to 24,162 tons, as against 26,691 tons shipped in the same month last year, showing a decrease of 2529 tons. Over the Cumberland and Pennsylvania Railroad for the same period the shipments were 232,604 tons against 288,950 tons shipped in 1873, a decrease of 56,346 tons.

OLD METALS, PAPER STOCK, &c.

The market for Old Metals, Rags and Paper Stock has been better this week than for some time past, but prices are almost the same as quoted in our last report. Dealers report a better demand for Wrought Scrap, and would be glad to purchase a great deal more than is offered, at 1⅝c. @ 1¾c. Book Stock and Waste Paper have declined half a cent. per pound. Old Metals are freely bought at our quotations. The purchasing prices are as follows:

Old Metals.—Copper, 18c. per lb.; Yellow Metal, 13c.; Brass, 13c. @ 14c.; Composition, heavy, 14c. @ 15c.; Lead, solid, 5½c.; Tea Lead, 5c.; Zinc, 4c. @ 5c.; Pewter, No. 1, 21c.; do., No. 2, 8c. @ 12c.: Spelter, 5c. @ 5½c., Wrought Iron, 1½c.; Sheet do., ½c.; Cast, do., ¾c. @ 1c.; Machinery, do., 1¼c.

Rags, &c.—Canvas, Linen, 5c. @ 5½c.; do. Cotton, No. 1, 5½c. @ 6c.; No. 2, 2½c.; White, No. 1, 6½c.; No. 2, 4c.; Colored, do., 2c. @ 3c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 6c.; Gunny Bagging, 1¼c. @ 1½c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c. @ 3½c.; Book Stock, 3½c. Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c. @ 4½c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c.; Grass Rope, 3½c.

PHILADELPHIA.

PHILADELPHIA, March 24, 1874.

The small amount of trade to be noted from week to week in this market is perhaps slightly improved for the week under review. This improvement is rather in Manufactured Irons than in general trade. Pig Iron continues very dull, and the sales small, with prices, if anything, less firmly maintained. The prospect of some action in Congress on the currency question has given some hope of better things and a little more inquiry. The Bar mills report a little improvement in orders, and rather more doing, but no change in prices. The general dullness of trade is shown by the fact that both the Crane furnaces, at Catasauqua, and the Cambria Iron Works, at Johnstown, are idle. Both stopped ostensibly owing to labor troubles, but in the case of the Cambria Works it is said there were no orders on hand to justify production. Little business is done in Rails, but, as noted last week, transactions occur in Old Rails and Muck Bar. Most of the Rail mills now at work are running on re-rolling orders. The general belief as to the Iron trade is that if speedy and definite action is taken by Congress on the monetary questions, that there will yet be a fairly active and legitimate trade at about present prices for the rest of the year.

The following are as nearly as may be quoted the prices current in this market at this date:

PIG IRON.—No. 1 Foundry, $34 to $35; No. 2, $32; Gray Forge, $30.

BARS.—3·2 to 3·3 cents per lb.

RAILS—At works, $60 to $65.

OLD RAILS—$41 to $42·50.

MUCK BAR—$45 to $46.

SCRAP—Nominally $41 to $42, for choice.

The sales include 1000 tons No. 1 Foundry, at $34; 1000 tons No. 2, do., at $32, both Lehigh Irons; small sales of Gray Forge at quotations; 1000 tons Rails at works, on private terms; 1500 tons Old Rails here, at $42·50, and several lots same at about the same figures, also several contracts closing for considerable lots neutral Muck Bar at about rates quoted. Market very dull and flat.

Messrs. BLAKISTON & COX, under date of March 23, report: *American Pig.*—Prices are unchanged, but makers of leading brands still refuse to make concessions to effect sales. The Crane furnaces are still out of blast, and the managers have not decided as yet when to "blow" them in. Deliveries from all the banks are making slowly, and stocks are accumulating. We note sales of 1000 tons No. 1 Lehigh brands, and 300 tons No. 1 Schuylkill, delivered here in the future on terms that are private, but prices are freely up to quotations. We quote No. 1 Foundry at $34 to $35; No. 2 do. at $33; Gray Forge at $31, nominal, and lower grades at about $27, also nominal. *Scotch Pig*—Is in small stock, and sells in a small way at $43 for Eglinton and $44 for Glengarnock. *Merchant Bar.*—The mills are fairly active, and in one instance new orders have been refused. Prices are unchanged, most of the makers holding 3 1-10c. as a base. We learn Pittsburgh brands are offering here at less than this price, but do not enter much into competition with those manufactured here, on account of the tendency of Pittsburgh bars to cold or red shortness. *New American Rails*—Are commanding some attention, and we note sales of 500 tons at $65 at the mill. *Old Rails*—Are quoted at $41 to $42, but although there is some inquiry, we learn of no recent transactions. *Scrap Iron*—Is held at $39 to $41, according to quality, for No. 1 Wrought. Business in all branches of the trade still lags, and the demand is far below the supply in all kinds of manufacture. It is probable that the business of the year will be done after the gathering of the crops and in the fall months.

PITTSBURGH.

PITTSBURGH, March 21, 1874.

PIG IRON.—There has been a little more activity in the Pig Iron trade this week; at least there were more sales made public than for some time past, but there is no improvement to note in the general tone of the market, and the operations, as a rule, show a lower range of prices. The mills, however, as a general thing, are still adhering to the hand-to-month policy, buying only for immediate necessities, but some of them have let their stock run down so low that they have been forced into the market during the past week, and this accounts for the increased volume of business; however, we look for a more active market from this on, as it seems to be generally admitted on all hands that prices cannot go much, if any, lower, and then consumers generally have but little stock, and will soon be obliged to replenish. Gray Forge Mill Irons may be fairly quoted at $28, cash, and $29, 4 mos., as the most of the sales within the past two or three weeks have been at these figures, but there are not a few holders who obstinately refuse to accept less than $29, cash, and $30, 4 mos., that is, for choice brands, and it is certain that those furnaces west of here, even at the last named quotations, cannot realize actual cost. Some producers say that after using up their stock they will bank their product and blow out, unless, in the meantime, there is a very radical change in the position of the market; but it is not likely that they will be driven to this last resort, as it is pretty certain there will be a more active market before long, although the prospects are not very favorable for much, if any, advance in prices. Present asking rates, say $29 @ $30, may be realized, which would, in reality, be an advance, as it is almost impossible to obtain these rates at present, while at the same time there is but very little choice Iron to be had for less. It is only those who are pressed for funds that are selling at the low figures, and it is not to be expected that there are enough furnaces in this condition to supply the market.

MANUFACTURED IRON.—Trade continues fairly active, the best evidence of which is the fact that the mills are all working to their full capacity. It is said, and I have no doubt it is true, that there has been more Merchant Iron turned out here since last October than ever before during the corresponding time, notwithstanding the recent panic, from the effects of which the country has not yet fully recovered. This may seem a little strange, in view of the unsatisfactory and depressed condition of trade at competing points, both east and west of Pittsburgh, but it is true, nevertheless. As noted in my last letter, orders are not now being rushed in as rapidly as they were a month or two ago, but, as already stated, the mills have all they can do, although working to their full capacity, and the indications are that this will continue during the next 60, perhaps 90, days. It is true prices are low, having weakened in sympathy with the raw material, but the feeling seems to be generally entertained that the lowest notch has been reached, as the recent reduction in the cost of Pig has already been fully discounted. A month or six weeks ago three cents was the ruling price, whereas at the present time orders are being filled on a basis of 2¾ cents for Bars, that is in a regular way. It is doubtful whether orders would be placed for specific deliveries, say May or June at the last named quotation. The fact of the matter is, our manufacturers do not care to contract ahead.

NAILS.—There is a continued steady demand for Nails, and the factories, although working to their full capacity, have all they can do, and prices are fully sustained—four dollars, with two per cent. discount for cash. It was contemplated, some weeks since, to put up prices 12½ cents per keg, but the decline in Pig and Finished Iron, which was not then expected, has knocked this in the head, for the present at least, and the indications at the present writing are that there will not be much change either way in prices during the balance of the season.

STEEL.—There is a continued good demand, orders are coming in freely, and the mills, although running to their full capacity, are having all they can do; the spring trade has opened very promisingly, and bids fair to hold out. In the present condition of the market our manufacturers have no difficulty in competing successfully with Europe. This is evident from the fact that American is rapidly taking the place of foreign, and the prejudice which existed in favor of English is steadily subsiding. No change to note in prices.

SCRAP IRON.—Trade continues dull, at least it is so reported by dealers generally, but there is still something doing, and prices have undergone no quotable change recently. Following are the buying rates: Car Wheels, $32 per gross ton; Metal Castings, $25; Cast Turnings, $12; Grate Bars, $15.

COAL.—There is no improvement to note in the market for this important staple, either present or prospective, and operators generally are feeling pretty blue. In consequence of an almost uninterrupted river navigation all winter, the markets below are all glutted and prices are down to, if not below, cost.

COKE.—Trade continues dull, and, to makers, in a very unsatisfactory condition, with but little prospect, at this writing, of an early change for the better. The stagnation in the Pig Iron trade has curtailed the consumption of Coke largely, hence prices are weak and down to about first cost.

The Pittsburgh *Commercial* of the 21st inst. says: The sales of Pig Iron the past week were about the same as for several weeks, and confined to lots offered at a concession from former rates. The outlook for the furnacemen is not at all encouraging, and the prices quoted to-day indicate a willingness on the part of producers to meet the views of buyers as to prices, though we learn that many holders are firm at $30 to $31 per ton, four months, for best Gray Forge Irons. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

310 tons Gray Forge	$29·00—4 mos.
300 tons Gray Forge at foundry	28·00—4 mos.
250 tons Gray Forge	28·00—cash.
200 tons Gray Forge	29·00—4 mos.
150 tons Gray Forge	29·00—4 mos.
120 tons Gray Forge	29·00—4 mos.
120 tons Open Gray	30·00—4 mos.
20 tons No. 1 Foundry	33·00—4 mos.
10 tons No. 1 Foundry	32·00—4 mos.
10 tons Silvery	27·00—4 mos.
70 tons a mixed lot	pt. terms.

ALLEGHENY COKE.

600 tons Gray Forge	pt. terms.

CHARCOAL HANGING ROCK.

43 tons No. 1 Foundry	$40·00 @ $43·00—4 mos.

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, reports us the following prices under date of March 24, 1874: Trade still rules quiet for the season, and there is an absence of that buoyancy that generally is noticeable at this time of the year, but it is not yet too late for a decided improvement in this respect, and there are those that still are hopeful. We quote the market as dull and weak.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick; 1 to 4½ wide by 1½ to 2 thick	3½c. to 3¾c. per lb.
Round and square, ordinary sizes, from ⅜ to 2 inclusive	3½c. to 3⅝c. "
Hoop Iron, 1½ wide and upward	4¾ to 5c. per lb.
Band Iron, from 1½ to 4 in. wide	4 to 4¼c. "
Horse Shoe Iron ¾ to 1 wide by ⅜ to ½ thick	5·87½c. "
Norway Nail Rods	7½ to 8 c. "
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	16½c. "
Machinery Steel	11½c. "
Cast Spring Steel	11c. "
Homogeneous Steel Plate	13c. "
Perkins' Horse Shoes, per keg of 100 lbs.	$5·87½
" Mule Shoes " "	6·87½

Common Horse Nails, from 14c. to 18c per pound.

	10	9	8	7	6	
Putnam Horse Nails	23	24	25	26	28c.	per lb.
	10	9	8	7	6	
Globe Horse Nails	23	24	25	26	28c.	per lb.

R. R. Spikes	5¼ by 9-16 at 3¾c. to 4c. per lb.

CINCINNATI.

Messrs. ADDY, HULL & CO., under date of March 23, write us as follows: The slight improvement noted in our last does not continue. The market during the past week has been very inactive, without considerable transactions in any grade. Prices nominally unchanged.

HOT BLAST CHARCOAL.

Hanging Rock No. 1	₱ ton	$38·00 @ 40·00—4 mos.
" " No. 2		35·00 @ 37·00—4 mos.
" " Forge		30·00 @ 32·00—4 mos.
Tennessee No. 1		35·00 @ 37·00—4 mos.
" Forge		30·00 @ 32·00—4 mos.
Alabama No. 1		35·00 @ 37·00—4 mos.
Missouri No. 1		38·00 @ 40·00—4 mos.
" No. 2		35·00 @ 37·00—4 mos.

HOT BLAST STONE COAL.

Missouri No. 1	₱ ton	$37·00 @ 38·00—4 mos.
" Forge		30·00 @ 32·00—4 mos
Ohio No. 1		33·00 @ 35·00—4 mos.
" Forge		30·00 @ 31·00—4 mos.
Scotch Pig, No. 1		

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel	₱ tn.	$55·00 @ 60·00—4 mos.
Missouri " "		55·00 @ 57·00—4 mos.
Kentucky " "		55·00 @ 57·00—4 mos.
Tennessee " "		55·00 @ 57·00—4 mos.
Georgia " "		55·00 @ 57·00—4 mos.
Alabama " "		55·00 @ 57·00—4 mos.
Machinery and Forge		55·00 @ 57·00—4 mos
Blooms		100·00 @ 110·00—4 mos.

BOSTON.

BOSTON, March 21.—There is hardly business enough doing in either Pig or Refined Bar Iron to establish prices. Our quotations are nominally without change, as the offer of lower prices will not increase the demand materially. We quote yard lots of American Pig Iron at $36 to $41 per ton, including No. 2 extra at $36 to $38, and No. 1 at $39 to $41. We quote Eglinton at $45, Coltness at $48 to $49, Charcoal at $50 to $60. American and English Refined Bar Iron is selling at $72·50 to $83 per ton for the ordinary sizes, and $88 to $92 for extra sizes, according to size. Cast Steel is selling at 16c., gold, for English, 18c., currency, and 14c. to 15½c. for American, currency, with fancy brands of English selling at 17c., gold. Anchors are selling at 8½c. per lb.; Chain Cables (⅝ to 2 inches thick), 7c. to 8¾c. per lb.; Coil Chains, 7½c. to 16c. from 3-16 to 1¼ inches. We quote Boiler Plates at 6½c. to 7½c. for Flanges, 4¾c. to 5c. for C No. 1, and 4¼c. to 4¾c. per lb. for Common and Tank. Russia Sheet is selling at 18c., gold, and 20c., currency, for perfect lots. English and American do. are selling at 6¾c. to 8¼c. per lb. currency. We quote Galvanized Sheet Iron, No. 20, at 11c.; Nos. 21 to 24, 12c.; 25 and 26, 13c.; 27, 14c.; 28, 15c. Nails are selling at $4·25 for 10d to 60d, and other sizes at a range of $4·50 to $8·25 per 100 lbs., less discount of 15c. per keg to the trade on 100 keg lots. Horse Nails, 28c. for No. 7.—*Commercial Bulletin.*

LOUISVILLE.

Mr. GEO. H. HULL, under date of March 23, writes us as follows: The market is dull for all grades of metal, and prices are lower. The usual time, four months, is allowed on quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores.		$38·00 @ 40·00
" 2 " " " " ..		34·00 @ 36·00
" 1 Forge, " " " ..		31·00 @ 32·00
" 1 F'dry, from Tennessee Ores.....		35·00 @ 40·00
" 2 " "		33·00 @ 35·00
" 1 Forge, "		30·00 @ 31·00
" 1 F'dry, from Alabama Ores.		35·00 @ 38·00
" 1 " Iron Mountain Ores.		41·00 @ 42·00

HOT BLAST STONE COAL.

No. 1 F'dry, from Missouri Ores.....	34·00 @ 36·00
" 2 " " " " ..	32·00 @ 33·00
" 1 Forge, " " " ..	30·00 @ 31·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores..		60·00 @ 63·00
" " Tennessee Ores.....		53·00 @ 55·00
" " Alabama Ores.....		55·00 @ 57·00
" " Georgia Ores.....		55·00 @ 57·00
" " Missouri Ores.....		53·00 @ 57·00
" " Kentucky		55·00 @ 57·00

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending March 24, 1874:

Hardware.

Boker Hermann & Co.
Mdse. pkgs., 4
Casks, 10
Cases, 12
Bodenheim, Meyer & Co.
Casks, 2
Drexel, Morgan & Co.
Packages, 4
Cases, 2
Cutlery, cs., 2
Degraw, Aymar & Co.
Casks, 2
Chains, 1
Eaton E.
Cases, 2
Field A. & Co.
Anvils, 190
Cases, 7
Hildick A. H.
Anvils, 12
Casks, 3
Hilger E. & Sons,
Casks, 1
King, Briggs & Co.
Trowels, cks., 6; cs., 1
Scythes, bdls., 2
Cases, 1
Per. caps, cs., 2
Lau & Garlichs.
Mdse. pkgs., 1
Merchants Dispatch Co.
Anvils, 64
Mason John W. & Co.
Wire rope, coils, 13
Meriden Britania Co.
Cases, 2
Oastler W. C.
Chains, cs., 1
Russell & Erwin Mfg. Co.
Files, cks., 4
Schuyler, Hartley & Graham,
Mdse. pkgs., 14
Stratton John F. & Co.
Cases, 10
Struller Louis,
Cutlery, cs., 1
Sears Henry,
Cases, 4
Sargent, Studley & Co.
Cases, 5
Towt L. W.
Cases, 2
Vogt J. & Co.
Cases, 5
Wiebusch F.
Chains, cks., 37; pcs., 8
Casks, 1
Order.
Files, cks., 18

Iron.

Brown Bros. & Co.
Bars, 15,141
Baiz A. & Co.
Scrap, tons, 15
Burdett & Pond,
Scrap, tons, 8
Crocker Bros.
Pig, tons, 111
Lang W. Bailey & Co.
Bundles, 157
Naylor & Co.
Fish plates, bdls., 305
Phelps, Dodge & Co.
Iron sheets, 60; bdls., 12
Piersons & Co.
Rods, bdls., 146
Rionda Benj.
Scrap, tons, 150
Order.
Bars, 2207
Rails, 1549
Fish plates, bdls., 120

Steel.

Congreve Chas. & Son,
Rails, 1049
Drexel, Morgan & Co.
Bessemer rails, 1325
Steel tubes, bdls., 20
Naylor & Co.
Sheet, cs., 2
Bars, cs., 8; bdls., 34
Tires, 36
Cases, 3
Prosser Thos. & Son,
Bar, bdls., 142
Sanderson Bros. & Co.
Bundles, 62
Cases, 2
Casks, 4
Order.
Bars, 61
Bundles, 248
Cases, 3
Casks, 1

Metals.

Bartram Bros.
Scrap copper, cs., 3
Brown, Shipley & Co.
Antimony, cks., 17
Bruce & Cook,
Tin and terne plates, bxs., 3575
Byrnes Joseph & Co.
Tin, slabs, 376
Durand J.
Scrap copper, bxs., 2
Grund F. & Cerero,
Lead, bars, 460
Morton, Bliss & Co.
Tin plates, bxs., 800
Phelps, Dodge & Co.
Tin plates, bxs., 7717
Tin, slabs, 203
Antimony, cks., 25
Windmuller L. & Roelker
Spelter, plates, 5069
Visserde Simon,
Tin, slabs, 600; pcs., 1540
Order.
Tin and terne plates, bxs., 12,584
Antimony, cks., 86
Spelter, plates, 6534
Tin, slabs, 140; ingots, 140

FOREIGN.

GREAT BRITAIN.

Messrs. J. Berger Spence & Co., London, Glasgow and Manchester, under date of March 7, 1874, report:

Metals.—The trade in this market is very quiet, and operations are further restricted by the hope, on the part of consumers, that the deferment of their purchases will operate to their advantage. The downward course of Scotch Pig Iron has been arrested, and an improvement of 4/ to 5/ per ton has taken place in the value of warrants. The shipments for the past week are returned as 10,580 tons against 12,144 tons in the corresponding week of last year; and the stock in store now amounts to about 40,000 tons, having decreased 1300 tons during the past month. Middlesborough Pig Iron is without change. From the returns just issued of the make in that district it appears there are now 136 furnaces in blast which, during the past month, produced 168,064 tons of Pig Iron, and all, save 8822 tons, has gone into consumption. The present anomalous state of business has been considered a fit season for the Nail makers in South Staffordshire and Worcestershire to inaugurate a strike for an advance in their wages, and there are now something like 8000 persons suffering therefrom. Copper is firm, with a moderate amount doing in Chili Bars. The charters from the West Coast for the fortnight ending February 2 are cabled as 1900 tons. Tin is rather irregular at our quotations. Lead is dull, but no change of importance has yet taken place in its value. Spelter is without alteration, but the tendency is toward reduced prices. In Sheet Zinc 160 tons were offered by auction this week in London, and 80 tons sold at prices varying from £28. 7/6 to £28. 12/6 per ton.

IRON—"Ayresome" Yorkshire Pig Iron, nominal, No. 1, 95/; No. 2, 90/; No. 3, 87/6; No. 4 (Foundry), 85/; No. 4 (Forge), 85/ net cash, or 2/ extra 4 months' bills. Scotch Pig warrants, 92/6 to 95/. Staffordshire Bars, £12 to £14. Hoop Iron, £13 to £14. Gas Tubes, 52½ per cent. off list. Boiler Tubes, 35 per cent. discount.

COPPER.—English Tough Ingot, £88 to £90. Chili Bars, £77 to £79.

TIN—English Ingot, nominal, £103 to £105. Straits, £95 to £96.

TIN PLATES.—Best Coke, I. C., 28/ to 30/; Charcoal, I. C., 36/ to 40/ per box.

LEAD.—Best English Soft Pig, £22. 10/ to £23. Refined Red Lead, £26 to £27.

ANTIMONY.—French Star, £53 to £54.

SPELTER.—Silesian, £23. 10/ to £24. English, £23 to £24.

FRANCE.

(*Moniteur des Interets Materiels.*)

PARIS, March 9, 1874.—*Metals.*—There is not the slightest symptom of a speculative feeling in the European metal markets at present, and business is contracted within the narrowest limits. Consumers show, as yet, no inclination to step forward and buy at the reduced figures. The Copper market at London is rather firmer, however, the charters on the Chilian coast for the second half of January amounting to but 1900 tons. Chili Bars, good ordinary brands, are worth there £78; best from £80 to £81. Best selected commands £88 to £90. The Copper import into England since the last statement has been 5886 tons, against 4779 and 8368 in 1873 and 1872; the export 3443, against 4076 and 3072. The visible supply at London, Liverpool, Swansea and Havre, inclusive of afloats from Chili on the 1st instant, was 34,580 tons, against 41,909 a year ago, and 29,647 in 1872. There have been no dealings in Minnesota Copper at Havre, nor fresh arrivals. Chili Copper, in consequence of the precipitate decline to which it has been submitted in England, has gone to such a low figure on the Continent also, that it is calculated to attract the attention of both the speculative and consumptive element, although both are still holding back. The sales at Havre comprise 140 tons at between 203 and 216 francs the 100 kilos., usual conditions, according to brand, the top figure for a special one. The stock of Copper and Ore at Havre consists o 100 tons Minnesota, 1480 Chili and 125 sundry sorts, together 1705 tons, equal in pure Copper to 1650, against 1850 a month ago, and 680 last year. We quote American Lake, 210 to 245; Chili Bars, 96 per cent., 203 to 212·50; ditto Ore, 207·50 to 210; ditto Ingots, 220 to 225; Mexican, 187·50 to 190 frs. the 100 kilos. *Tin.*—The decline in Tin has been severely felt everywhere, but fortunately the stock here and at Havre was light during the tumble and is so still. Banca, nominally, still commands 280 here and at Havre; Straits, 265; and Peruvian, 220 to 240. In England Banca is down to £100 to £105; Straits at London, cash and three months prompt, to £94 to £95. There is little or nothing doing in *Lead* anywhere; arrivals at Havre during the month, 10,233 pigs. We quote Spanish here and at Havre 56 francs; other sorts the same figure. The metal has been erratic in its movements at the various European centers for the past week or two. English Pig at London, £22 to £22. 5/. *Spelter* has also declined very much, but we can discover no good cause for the depreciation. We quote Silesian here and at Havre 63 to 63¾ francs the 100 kilos, other descriptions 62½ to 63. The stocks in France are light. Silesian, spot, at London £23 to £23. 10/. *Iron* has come down from the high range it brought during the summer time, yet there is no anxiety manifested to lay in large supplies at the reduction in values. Makers' Iron may be had on more advantageous terms. Manufacturers' Iron moves off slowly under list prices.

HOLLAND.

(*Wm. Brummer, Schroder & Co.*)

ROTTERDAM, March 7, 1874.—*Tin*—The dull feeling which prevails in our Tin market has not been interrupted for a single day during the week, the spot sales of Banca fluctuating between the following figures: 62, 62¼, 62, 61¾, 62 and 63 guilders; March delivery 63, 62½, 63, 62¾, 63¾, 63¾, 62½ and 62¼; May ditto, 61½ and 62. Billiton afloat 62, and spot, 61. Prices have now declined to such an unexpectedly low ebb that a statement of the various dates of sales effected at auction of quantities, and of prices made by the Netherland Trading Society, will be necessary to show the extreme fluctuations to which the metal has been subjected in our midst:

		Slabs.	Guilders.
1854, August 9		132,874	66,—
1855, August 16		134,430	74,50
1856, August 7		167,382	73,50
1857, July 16		190,559	82,25
1858, July 6		190,842	68,20
1859, July 7		189,128	82,50
1860, June 28		151,513	79,50
1861, June 26		149,189	69,—
1862, June 25		155,193	67,75
1863, June 24		119,092	76,—
1864, June 29		146,921	61,75
1865, June 29		168,704	56,—
1866,	March 22	111,746	49,86
	Sept. 24	109,359	46,—
1867,	March 28	69,477	54,—
	Sept. 26	71,031	54,25
1868,	March 31. Auction	10,600	55,—
	June 18, Einschreib.	2,500	55,05
	Sept. 30, Auction	89,587	54,50
1869,	April 1	49,447	82,50
	October 1	61,633	74,—
1870,	March 31	76,800	72,50
	October 7	80,004	75,30
1871,	March 30	80,971	75,—
	Sept. 28	83,218	78,80
1872,	April 11	52,772	96-98¾
	October 2	46,512	92-92¾
1873,	April 2	75,163	87-84
	Sept. 25	30,055	75,05
	Nov. 27	29,993	67,45
1874,	Jan. 29	20,825	70,50
	March 25	19,400	

EAST INDIES.

(*Aitken Spence & Co.*)

COLOMBO (Ceylon), Feb. 10, 1874.—*Plumbago.*—There is nothing doing either for the United States or London. About 100 tons are being shipped in the *Minerva* for New York, principally, we think, on native account. We hear of no new orders, either for American or London account. We quote free on board, without freight: Lump, 388/6 per ton; Chip, 189/; and dust, 105/. Freight, 75/. The market closed very quiet. Exchange, 1/11½.

AFRICA.

(*Alexander Duff & Co.*)

MAURITIUS, Feb. 6, 1874.—*Iron.*—Galvanized Iron is steady at $10 to $11 per 100 pounds. *Tin Plates* are quotable at $11·50 the case for I. C.; the market is better supplied. *Fire Bricks* are on the decline, and do not at present command over $50 to $60 per 1000. *Coal* is sustained at $12 to $14. English, and at as much for Australian, per ton. Exchange on London and Paris, 30 to 90 days, 6 per cent. premium.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

SHEFFIELD, Eng., March 10, 1874.

CAPITAL AND LABOR.

It has all along been evident that when the superabundant trade which over-burdened all classes of producers in this country during the years 1872 and 1873 had died away, and a reaction set in, there must be an alteration of the peculiar relations between capital and labor, which had grown out of the abnormal condition of affairs. There is no need to examine those causes in detail, the result being everywhere synonymous, and tending to advance the pay of all classes of operatives. The men, perceiving their opportunity, took advantage of it. Now the employers have had time to examine into their position and find themselves compelled to seek out some means of putting themselves on a level with foreign competitors, who invariably prove troublesome when trade is becoming dull. The natural reaction has fairly set in throughout the whole globe, and, in contrast to the feverish activity of the years named, is seen a general slackness of business, a diminution of prosperity, and a stoppage of many important enterprises. The colliery owners having been induced to make concessions (alluded to lower down) the employers in many branches of trade have initiated a step which will, I do not doubt, cause many tough fights between capital and labor. They have given notice of a reduction in wages, varying in amount according to the necessities of each particular industry. I cannot detail each instance, but, in brief, the position is about in this wise: the employers in the iron trade proffer the following system (which I give at length as an exception and on account of its intrinsic importance): "That the average selling price of the iron made by the twelve Staffordshire firms hitherto taken into account in this district, and those of the North of England firms, members of the Arbitration Board, shall be ascertained in the manner hitherto adopted in these two districts respectively for the months of December, 1873, and January and February, 1874, and thenceforth every successive three months. The two average prices for the North of England and for Staffordshire respectively arrived at on this matter shall be added together and then divided by two; and that upon the resulting average price the rates of puddling shall be fixed at 1/ for every pound of selling price, with the fractional fluctuations as before, and mill rates in proportion. The examination of the books to be made for three months ending one month previous to each quarterly settlement; and that this basis of settling iron workers' wages shall be binding on both parties until it be terminated by three months' notice by either side, to be given on January 1st, April 1st, July 1st, or October 1st, but no such notice to be given by either party prior to January 1st, 1875. It was also resolved that the price in both districts should be taken out immediately for the three months ending February 28th, 1874."

The men oppose this system—the Staffordshire section because the average is taken on bars only—a low class of iron—while in the North it is taken on all classes of iron made there, rails being fully 50 per cent. of the whole, and also a low class of iron. The Northern men object on other grounds. A dispute appears likely in the Sheffield steel trade on the question of the number of heats to be made on Saturdays. About 300 of the spring knife cutlers and spring knife grinders, employed by Joseph Rodgers & Sons (Limited), Sheffield, have struck work against an attempt to reduce their wages by taking off a penny in the shilling granted by the firm in the time of good trade, and always taken off when the pressure is less. Notice of this was given in December, owing to the collapse of the American trade, and to its since having continued almost wholly absent. The firm have summoned some of the men for breach of contract, and the cases are being heard to-day. The nail makers of the Sedgely district have struck for 15 per cent. advance, having rejected the masters' offer of a compromise. The trimmers and teamers of the Tyne docks are all on strike. Several sections of the Scotch miners have turned out on strike against a reduction of wages, amounting to about 1/ per diem, although their leader, Mr. McDonald, M. P., has counselled them to prepare for that fall in pay which he believes is "inevitable." 4000 miners in Somersetshire are on the point of striking against a drop of 10 per cent.; and the South Staffordshire colliers, numbering many thousands, oppose a reduction of 1 per day, and threaten a prolonged strike if the employers persist in enforcing the notice to that effect. There are many others in addition, principally in the coal and iron trades. Just at this juncture, too, there has been issued the first number of *Capital and Labor*, a journal put forth by the National Federation of Employers. It is very bitter, indeed, in speaking of and referring to the trades' unions, but in this its first number, there are no particular specimens of either editorial or other contributing articles which are specially disagreeable.

THE TARIFF QUESTION AND COMPETITION.

On these subjects *Iron* has these remarks: "But the halcyon days of protected industries appear—even in America—to be drawing to a close. The free traders, if as yet unequally matched as to actual voting power in Congress with their wealthy opponents, are daily securing a larger portion of popular sympathy, and are already striking terror into their enemy by bringing a bill before the House of Representatives, embodying some important issues, and opening up the whole subject of duties on imports. But this is not all. Other bills directly relating to revenue are either pending before Congress or in course of preparation, and we are informed that 'at least one of these contemplates a serious reduction in the duties on iron and steel.'

"A desperate resistance will, of course, be made to these measures. American ironmasters and mill owners will stand shoulder to shoulder in defense of their own peculiar interests, and have already endeavored to enlist the workmen on their side by putting before them 'the grave danger of a continued reduction of wages.' No time, money, or energy will be spared to defeat the efforts of the free traders, who, if persistently supported by the great West, must ultimately prevail. Pending the struggle, every sign of commercial panic will be put down to free trade, and the slightest dullness of business will be ascribed to the apprehensions excited in the minds of capitalists by the uncertain general outlook, and should another crisis occur similar to that through which America is now passing, the cause assigned for it will unquestionably be the actual or proposed reductions in the tariff.

"Seriously, the tariff has nothing at all to do with the present dismal state of things in the Great Republic. During the "late unpleasantness" the country was flooded with paper money, and the price of every kind of commodity rose in proportion. A paper dollar, although worth from half-a-crown to three and sixpence, according to the rate of exchange, was, so far as its actual purchasing power was concerned, of no more value in New York than a shilling is in London. At the flood of this tide of prosperity great enterprise was directed toward building cities and railways, and as a natural result wages increased to an enormous extent. Everybody was happy, and sang loud songs of praise, except a few carping critics, who never wearied of declaring that before the war a workman got more comfort for his ten dollars a week than for the twenty-five he earned after it, that everything was at a false price, that the balloon would "bust up," that the edifice would "cave in," and that a period of severe depression must be got over before business once more assumed a thoroughly healthy tone. These prophets of evil were not far wrong. The "bottom has fallen out" of the States, and the immediate result of the catastrophe has been a "leveling down" of prices and consequently of wages.

"To ensure a high pitch, the cord had been subjected to too much tension. It was sure to crack some day or other, and perhaps our cousins are rather glad that it is all over, and that things are working round into a healthy condition. Few people have made a greater outcry about high wages, and consequently dear production, than the iron and steel makers of the United States, and we are therefore much amused to find no count taken of the more favorable circumstances under which they will henceforth be called upon to compete with the foreigner. Although the comparison will not hold good as regards other departments of industry, the state of the American iron trade has a certain analogy with that of our own. Belgian iron, not satisfied with competing for German and Russian orders, and striving to elbow us out of the Continent altogether, actually threatens to invade our own ports. Luckily fuel is falling so rapidly as to encourage the hope that the manufacture of steel in this country will ere long resume its pristine activity. Cheaper fuel and lower wages will enable English iron to hold its own, and American ironmasters must learn to rely more upon cheap production than upon preposterous tariffs if they expect to see the young republic a successful competitor with England in the markets of the world."

THE FALL OF FUEL,

long predicted, has at last come about in a thorough manner, fully justifying the remarks I made on the subject in your issue of February 19th. At Sheffield, Barnsley, Manchester, Wigan, Leeds, in the great Durham coal field, in South Staffordshire, Wales and other districts reductions have just been notified, varying in extent from 1/ to 5/ per ton. Many things have led to this—among them being the dulness of the iron trade, the slack household demand, consequent upon the mild winter, increased supply afforded by numerous new collieries, and the pressure put on the coal owners by the iron masters. Not that these said coal owners have agreed to make the reduction without a struggle. By no means. Neither is it certain that the iron masters are really satisfied; in fact, many of them assert that another 3/ ought to come off before they can successfully meet foreign competition. I presume, however, that iron will be declared down about £1. 10 or £2 per ton, on the strength of this fall in fuel—a fact of which you will have information of through the cable. For myself, I shall not be greatly surprised to witness a further great drop in fuel within the next two months. A short time back a speculative "ring" bought up enormous stocks of coal in the joyful anticipation that winter would bring about a great rise in prices. Not only were they disappointed in that respect, but in some others, as events have proved; hence we may expect to see this tonnage of coal thrown into a weak and depressed market, to the very probable further depreciation of prices. We may—I do not confidently say, we shall—see a return to the quotations which were current prior to the late panic, subject, however, to the drawbacks that so many combinations have resulted from what has latterly taken place that prices could be "rigged" up again at very short notice. It needs no Adam Smith to demonstrate that the conditions which govern the realm of politico-social economy are far different from what they once were. The electric telegraph has, of itself, completely revolutionized matters—setting aside other most potent influences.

THE STATE OF TRADE

is, on the whole, much in the same condition as when last referred to. Somewhat of the causes having current influence over it will have been gathered from the foregoing remarks, so that I shall not, actuated by a desire to economize space, dwell further than is really necessary on the general theme, but confine myself to limited details. There has been a recovery in the Scotch pig iron market to the extent of some 6 or 7, but it is quite open to doubt whether the improvement is real. Warrants are now stationary at about 94/, with a fairly strong business doing. Makers' quotations are irregular, but large lots can be done at these figures: Gartsherrie, No. 1, 100/; No. 3, 93/; Coltness, No. 1, 102/6; No. 3, 92/; Summerlee, No 1, 100/; No. 3, 92/; Carnbroe, No. 1, 96/; No. 3, 92/; Monkland, No. 1, 93/; No. 3, 91/; Clyde, No. 1, 94/; No. 3, 91/; Govan, No. 1, 93/; No. 3, 91/; Langloan, No. 1, 100/; No. 3, 92/6; Calder, No. 1, 100/; No. 3, 92/; Glengarnock, No. 1, 97/6; No. 3, 92/; Eglinton, No. 1, 92/; No. 3, 90/; Dalmellington, No. 1, 92/; No. 3, 90/; Carron, No. 1, 100/; Shotts, No. 1, 100/; No. 3, 92/6; Kinneil, No. 1, 95/; No. 3, 91/. Scotch bars have fallen 10/—from £13. to £12. 10/. The malleable iron trade is very dull, but the shipbuilders are fairly busy. The Clyde shipbuilders were active last month. In the following table a comparison is shown between the past month and two months with the corresponding periods in the four years immediately preceding:

	One month. Vessels.	Tons.	Two months. Vessels.	Tons.
1874	14	23,000	26	31,000
1873	11	20,570	19	34,000
1872	10	14,200	23	27,000
1871	11	13,100	22	25,500
1870	11	13,500	22	22,000

A large proportion of the twenty-six vessels referred to were of great tonnage capacity. The largest was the *Liguria*, 4830 tons, and 650 horse-power, built for the famous line of the Pacific Steam Navigation Company, and intended to trade between the Mersey and Valparaiso. She was built by Messrs. John Elder & Co., whose name and professional reputation are so prominently identified with Pacific liners. Next in size came the *Lessing*, 3500 tons, and 600 horse-power, built by Messrs. Alexander Stephen & Sons, for the German Eagle Line, a new line of trans-atlantic steamers trading between Hamburg and New York. The *Utopia*, 2750 tons, and 450 horse-power, was added to Messrs. Henderson Brothers' Anchor Line of Clyde and New York traders, whose sailings are about to become three per week from each side of the Atlantic. Messrs. Robert Duncan & Co. were the builders. The *W. A. Scholten*, 2500 tons, and 400 horse-power, was built by Messrs. Robert Napier & Sons for the Holland and New York trade of the Netherlands-American Steam Navigation Company. There were also launched the *Glamis Castle*, 2400 tons; the *Aghele*, 2300 tons; two steamers of 2000 tons each; and a number of smaller ones, one of which was the new *Pharas*, a paddle steamer of 700 tons and 200 horse-power, built by Messrs. Robert Napier & Sons for the Commissioners of the Northern Lighthouses; and another was the *Waterford*, also a paddle steamer, of 1000 tons and 400 horse-power, built by Messrs. William Simons & Co., for the St. George's Channel service of the Great Western Railway Company. Amongst the sailing vessels launched last month there was one of 1700 tons. She was built by Messrs. Barclay, Curle & Co., at Stobcross ship yard, which is soon to pass into the hands of the Clyde Navigation Trustees for harbor extension purposes. There was likewise a small steam dredger launched for the Alloa Harbor Commissioners.

CLEVELAND, BARROW AND SHEFFIELD, ETC.

are not materially changed. In Cleveland finished iron meets with no inquiry whatever, neither is there any improvement in the demand for pig iron. Rails of heavy sections are quoted £10 to £10. 5/ and bars, £11. 10/. In the Barrow-in-Furness locality about 2500 tons of hematite are sent off weekly to the Continent, but the demand is quiet for future engagements, and may not improbably cease when the running contracts expire. Rails are quoted £15 to £16. 10/ in Bessemer steel; No. 1 pig, £6. 17/6; No. 2, £6. 15/; No. 3, £6. 12/6; and No. 4, £6. 10. A fairly good business is being done in rails with the American railway companies on account of old contracts, and there are said to be further inquiries in the market. There is a dearth of trade news at Sheffield, business being utterly sluggish and lacking enterprise for the most part. Some interest is shown in the fact that at the latest adjudication of contracts for the State railway of Belgium the Cockerill Company secured that for Bessemer steel tires of best quality at the price of 5173f. per 100 kilos., as well as those for 800 tires for carriage wheels of fine grained iron at 41c. per kilogramme, and for 120 ditto for tenders at 49c. In the same competition Messrs. Cooper & Company, of Leeds, managed to obtain the contract for twelve crank axles for locomotives in the rough at 20,580f., but were closely pressed by Demoor (Brussels), the Bochum Company (Westphalia), and others. In the Barnsley district the iron works are doing what appears to be a moderately good business, mostly on plates and sheets. The Penistone establishment of Messrs. Cammell & Co. is fairly busy on Bessemer material in the rough—tires, axles and a moderately good output of rails. At Sheffield itself there is no noteworthy change in the general condition of the heavier branches of trade, and they need not, therefore, be alluded to in detail. The Leeds engineering works are yet fairly active, as, indeed, are the principal ones at Sheffield. Messrs. Hathorn, Davis & Company, Sun Foundry, Leeds, have recently sent off some large engines to Russia, India and elsewhere. The same firm have turned out some very powerful pumping engines for collieries, Newton Gap, Clay Cross, etc.

BIRMINGHAM AND SOUTH STAFFORDSHIRE.

In hardware there have been reductions during the week in copper rivets, tacks and washers to the extent of ½d. per lb., and of 1/ per cwt. in clasp, clout, rose and lath nails and floor brads. Iron is as heretofore, but, as I have before remarked, a general drop of £1. 10/ to £2 is expected. Bars will, therefore, then average £12 officially, with other descriptions in proportion, and there can be no doubt whatever that the recent rise in sheets will not be enforced in its entirety. The Birmingham *Post* believes, "from exclusive sources," that the ironfounders in Wolverhampton are for the present steadily engaged on orders for tinned and enamelled hollow-wares, box-irons, and miscellaneous castings. Locks and latches of the better class employ pretty steadily the principal firms, but for the cheaper descriptions of those articles the demand is particularly quiet. Cut nails and washers are steady, considering the quotations. The Willenhall lock trade is fairly well sustained in some of the leading branches of door locks, but other departments of the industry, both here and in the adjacent localities of Short Heath and New Invention, are much complained of by the manufacturers. The curry comb trade is decidedly improving, principally on United States account, to which market three-fourths of the curry combs made in this district are exported. The iron tube and fitting trade at Wednesbury is quiet, and no improvement is anticipated until the price of fuel and wages is definitely settled. Engineering ironwork of various leading kinds is in only quiet request, contracts being placed just now with the greatest reluctance. At Darlaston and Smethwick the nut and bolt trades are less buoyant than described a short time since, the American demand, which was to some extent of a speculative character, having conspicuously declined. The settlement of the wages question in the wrought nail trade will, after all, there is reason to fear, be brought about by the old and barbarous method of a strike or lock-out. It is earnestly to be hoped that at the eleventh hour moderate counsels will so far prevail on both sides as to avert such a deplorable calamity. The demand for chill rolls, and other mill and forge machinery, is not so active as reported a little while ago, owing, no doubt, to the depression in the iron trade, but the leading producers at Bilston, West Bromwich, and other parts of the district, are on the whole very fairly occupied.

In the nail trade the demand is exceptionally active, considering the high standard of quotations, some very fair orders both for cut and wrought nails being still in the market. Iron tubes and fittings are only in moderate request, the unsettled aspect of the iron market restricting operations to very urgent requirements. Safes and strong-rooms are in steady inquiry. Large orders are in course of execution for railway rolling stock, but current inquiries are not of important extent. The lamp manufacturers, although well engaged in the railway branch, are receiving very few orders for house lamps, the season for this branch of the trade being now virtually over. The wire drawers complain of the serious effects of foreign competition, but the wire workers are experiencing a steady demand for bird cages, sieves, riddles, and other leading classes of produce. The metal rolling mills are in steady operation, brass strips and sheets being prominent features of request. Engine fittings command a fairly sustained inquiry. Mr. R. C. Rayson, of Birmingham, has patented a new loom for weaving wire gauze, which deserves special notice. This invention has for its object to adapt looms or weaving machinery to the weaving of wire gauze. The eye of the shuttle is made in a diagonal direction, instead of at right angles to the line of the shuttle's motion, by which means any set in the wire is prevented, and resistance to the passage of the wire is avoided. The taking-down mechanism consists of two rollers, the upper one being spiked and the under one plain. The said rollers are geared together, and have the same speed, but rotate in opposite directions. The axis of the under or plain roller is fixed in its bearings, so as to be incapable of receding from the spiked upper roller. By these modifications, the fabric of wire gauze is taken down with certainty and uniformity. The japanners and tin plate workers experience an improving demand for leading classes of season goods. In the electro-plate trade, table requisites are among the conspicuous features of current inquiry.

SOUTH WALES.

There is no further alteration to record in the condition of the iron trade of this district, matters being quite unchanged in all respects; but the tin plate trade appears likely to be troubled, particularly in Carmarthenshire. The men are "going in" for advances of wages, ranging from 20 to 40 per cent., which the employers say is perfectly and ridiculously unreasonable in the present unsettled state of trade. They have therefore given notice to terminate contracts and close the works in 28 days. This prompt action may possibly take the men by surprise.

METALS.

Metals as a whole are quiet. The following merchants' circulars give different views of the market: Von Dadelzen & Co.—*Copper* has been more active at an advance of about 20/ per ton for Chili bars. Sales to the extent of about 1000 tons have been reported. Bars from £77. 10/ to £78. 10/ cash, £78. 10/ to £80 from two to three months, prompt. Business to a small extent has taken place in Burra from £86 to £87, and in Wallaroo from £87 to £88. English steadier, and in better demand. *Tin* has further declined, but very little business could be done at the reduced prices, buyers being scarce. The value of Straits on the spot is £95, and Australian has been sold as low as £94, cash, tin for forward delivery realizing about 20/ to 40/ per ton less. May delivery has been done at £93, and March shipment at £94. English tin obtainable considerably below smelters' prices. In Holland prices are quite nominal. The next Dutch sale will take place on the 25th instant, and will consist of 19,400 slabs Banca, and 3100 slabs Billiton. Tin-plates are unchanged, and there is a probability of a lock-out of workmen. *Lead* remains dull, and it is difficult to effect sales. Good soft English pig, £22 to £22. 10/. *Spelter*—The market is almost at a stand still, and prices quite nominal, £23 to £24, according to brands. *Quicksilver*—£19. 10/ to £20.

At the Cornish Ticketing, on Thursday, 719 tons copper ore realized £2286, being an average of £3. 3/6 per ton. Fine copper, 42 tons 17 cwt.; average produce, 6; average standard, £99. 10/, being an advance of 4/ on last sale. The tinsmelters, on the same day, reduced the standards of tin £4 per ton all round. They are now—superior common, £84; superior fine, £87, which brings the price of block-tin from £55 to £53 per ton.

Messrs. Kelly & Co. say: The Metal market does not appear to have strength to go beyond the most moderate business. Iron quotations are in most centers lower, and, in some cases, much lower. Foreign copper, easier; Chili bars, fair sales; demand for English limited. No reaction in foreign tin; English irregular; Cornwall dreading Australia and Peru; value thought to have reached its lowest. Tin plates, fair business at moderate prices. Spelter has become a steady article. Lead has not recovered from the depression occasioned by the recent failures. Quicksilver, dearer when wanted in lots. Antimony weaker. *Antimony*, regulus, £53 to £54. *Copper*, tough ingot, £87 to £88; best selected ingot, £89 to £90; Chili bar, cash, £77. 10 to £79; Chili regulus, 15 to 15/9d. the unit; Wallaroo, £88 to £89. *Pig Iron*—Glasgow warrants, 90 to 91; Gartsherrie, No. 1, 100, and No. 3, 93/; Coltness, No. 1, 105/; No. 3, 95/; Middlesborough, No. 3, 78 to 79. *Lead*—English, soft pig, £23 to £24. 10/; refined red lead, £26. *Quicksilver*—£19 to £19. 10/, nominal. *Spelter*—English, best, £25 to £25. 10/; Silesian, £24. 10/ to £25. 5/. *Tin*—English blocks and ingots, £110 to £111; refined, £112 to £113, nominal; Straits

£97, cash; £94, to arrive; Banca, £112 to £114. *Tin Plates*—Best charcoal, I. C., 38*s*. *Zinc*—sheets, £32. 10 to £33. 10*s*.

I find the following remarks in Messrs. French & Smith's Tin Circular, dated from London on March 6: *Tin*—The price fell rapidly in February, and is now about £20 per ton lower than at our last monthly report. This fall is owing to apprehensions of the effect to be produced by the large imports from Australia, which, certainly up to the present, are very large. We have to see, however, whether the lower prices now ruling will not diminish these imports. It is certain from the meetings of many Cornish mining companies that the state of the tin trade is most disastrous to them. We draw attention to the statistics as given below: Foreign in London, including Australian (not ores) estimated at 2187 tons; Banca in Holland, warrants, 695 tons; Billiton in Holland, 760 tons; total, 3642; afloat for Europe, tin from the Straits, advised by mail and telegram, 735 tons; Billiton tin afloat for Holland, 380 tons; total, 4757 tons; Banca in Trading Company's hands, unsold, 3600 tons; Banca floating, 220 tons; total, 8577 tons. Prices of Straits tin, £97. We estimate the quantity of Australian tin ore now here unsold to be about 1000 tons, equal to 600 tons tin.

Marvels of Mechanical Skill in Metal Working.

The *World of Wonder* records the following:

"In the twentieth year of Queen Elizabeth, a blacksmith, named Mark Scaliot, made a lock consisting of 11 pieces of iron, steel and brass, all of which, together with a key to it, weighed but one grain of gold. He also made a chain of gold, consisting of 43 links, and having fastened to this the before mentioned lock and key, he put the chain about the neck of a flea, which drew them all with ease. All these together—lock and key, chain and flea—weighed only one grain and a half. Oswaldus Nothingerus, who was more famous than Scaliot for his minute contrivances, is said to have made 1600 dishes of turned ivory, all perfect and complete in every part, yet so small, thin and slender that all of them were included at once in a cup turned out of a peppercorn of the common size. Johnnes Shad, of Meiteband, carried this wonderful work with him to Rome, and showed it to Pope Paul V., who saw and counted them all by the help of a pair of spectacles. They were so small as to be almost invisible to the eye."

The smallest steam engine on record was made by a Scotchman named Crawford. It is perfect in every part, and so small that it can be covered by a lady's thimble. It can be worked by steam, for which Mr. Crawford has a small apparatus prepared, but he usually works it by atmospheric pressure through a flexible tube, with rubber air receiver. Mr. Crawford is an engine manufacturer, and made the engines on the Cunard line of steamships. The pet engine was made as an amusement, and to show what could be done. It is undoubtedly the smallest working machine ever made. Mr. Crawford keeps it carefully enclosed in a glass case, and has refused several offers for it from persons who wished it as a curiosity.

Among the marvels of ingenious mechanism, the great clock of Strasburg Cathedral stands pre-eminent. It is said to have found a rival, however, in the handiwork of a German mechanic, of Cincinnati, who has made a clock which is is thus described: We see in a glass case, a three-story, steeple-shaped clock, four feet wide at the first story and three feet high. The movement is placed in the first story, on four delicate columns, within which swings the pendulum. The second story consists of two tower like pieces, on the doors of which there are two pictures that represent boyhood and early manood. A tower crowns, as third story, the ingenious structure. A cock, as a symbol of watchfulness, stands upon the top, directly over the portal. When the clock makes the first quarter, the door of the left piece of the second story opens, and a child issues from the background, comes forward to a little bell, gives it one blow and then disappears. At the second quarter a youth appears, strikes the bell twice, and disappears; at the third there comes a man in his prime; at the fourth we have a tottering old man, leaning on a staff, who strikes the bell four times. Each time the door closes of itself. When the hours are full, the door of the right piece of the second story opens, and death, as a skeleton, scythe in hand, appears, and marks the hour by striking a bell. But it is at the twelfth hour that we have the grand spectacle in the representation of the day of judgment. Then, when Death has struck three blows on the little bell, the cock on the top of the tower suddenly flaps his wings, and crows in a shrill tone; and, after Death has marked the twelfth hour with his hammer, he crows again twice. Immediately three angels, who stand as guardians in a central position, raise their trumpets with their right hands (in the left they hold swords), and blow a blast toward each of the four quarters of the earth. At the last blast the door of the tower opens, and the resurrected children of earth appear, while the destroying angel sinks out of sight. Then, suddenly, Christ descends, surrounded by angels. On his left there is an angel who holds the scales of justice; on his right another carries the alpha and omega—the beginning and the end. Christ waves his hand, and instantly the good among the resurrected are separated from the wicked, the former going to the right, the latter to the left. The archangel Michael salutes the good, while on the other side stands the devil, radiant with fiendish delight—he can hardly wait for the final sentence of those who fall to him, but, in obedience to the command of the central figure, he withdraws. The figure of Christ raises its hand again, with a threatening mien, and the accursed sink down to the realms of the satanic majesty. Then Christ blesses the chosen few, who draw near him. Finally we hear a cheerful chime of bells, during which Christ rises, surrounded by his angels, until he disappears and the portal closes.

A Good Furnace Record.

The Jackson Iron Company have two charcoal furnaces at Fayette, Mich., which have been doing so well as to merit especial mention. They are 9 feet 6 inches bosh, and 41 feet high inside. The last four blasts averaged 21 and 26½ tons per day for one furnace, and 21½ and 27⅛ tons per day for the other. One of them, now in blast, made its first run on the 12th of July, 1873, and up to February 28 had made 6820 gross tons of 2268 pounds. As four days were lost in repairs, the average was 29 9-10 tons per day for each day actually in blast. The largest day's work was 38 tons, the largest week 235¼ tons, and the largest month of 30 days 941 tons. The ore, which is from the Jackson Mine, is crushed very fine, and no lump larger than a hen's egg is admitted to the stack. The limestone is also crushed. The iron made is about nine tenths No. 1 for Bessemer steel.

Accident to Mr. James I. Bennett, of Pittsburgh.—The Pittsburgh *Dispatch*, of March 4, gives the following particulars of a serious accident to Mr. James I. Bennett: Mr. James I. Bennett, of the firm of Graff, Bennett & Co., met with an accident on Monday evening by which he sustained severe injuries, and which might have resulted fatally but for the timely assistance of persons who happened to be in the near vicinity at the time. Mr. Bennett was driving to his home in a buggy, and when crossing the railroad bridge at Superior station his horse became frightened, and backing suddenly pushed the carriage over the bridge before Mr. Bennett could get out. Horse, vehicle and man fell a distance of 27 feet upon the railroad track below. Mr. B. was rendered insensible, and was lying directly on the track, when he was discovered and pulled off it. The Cleveland express train was approaching at the time, and had he remained in the position in which he was found a few seconds, he would undoubtedly have been run over and cut to pieces, as it was getting dark, and he would, in all probability, not have been seen by the engineer of the train. He was assisted to his residence, and medical aid summoned. He is very severely bruised, and it is thought that he is internally injured. Although confined to his bed, his physician does not entertain any fears of a fatal termination of his injuries.

A Novelty in Coffee Pots.—Messrs. J. F. Willer and Peter Knutson, of La Crosse, Wis., have introduced a new coffee pot into the market which presents some novel features. The pot is composed of three different sections—the upper or water receptacle, the middle one, into which the gas, alcohol, or coal oil lamp is placed, and the lower receptacle, for the coffee or other articles which are intended to be boiled. The lower part is detachable, and the coffee, tea, etc., placed therein. The upper receptacle is filled with water, closed tightly, and the lamp then lighted. The generation of the steam forces the boiling water up through a tube to a glass bulb, and then through a smaller tube and strainer, to the lower part, extracting the strength of the coffee. The lamp is then extinguished, and the liquid slowly drawn up again into the water receptacle. The process is repeated, if the coffee is desired to be very strong. The glass bulb or tube indicates, by the passage of the liquid through it, the different stages of the cooking process. The coffee is then drawn off for use.

London Metal Market.

(From The Mining Journal.)

	£.	s.	d.	£.	s.	d.
Copper—₰ ton.						
Best Selected	88	0	0	90	0	0
Tough Cake & Tile	86	0	0	88	0	0
Sheathing and Sheets	94	0	0	95	0	0
Bolts	96	0	0	98	0	0
Bottoms	97	0	0	99	0	0
Old	85	0	0		—	
Burra Burra	87	0	0	88	—	
Wire ₰ lb.	0	1	0¾		—	
Tubes "	0	1	0¾	0	1	1
Brass—₰ lb.						
Sheets	0	0	10	0	0	11
Wire	0	0	10¾		—	
Tubes	0	0	11¾	0	0	11¾
Yellow Metal Sheathing	0	0	8¾	0	0	8¾
Sheets	0	0	8		—	
Spelter—₰ ton.						
Foreign on the spot	24	0	0		—	
" to arrive	24	0	0		—	
Zinc—₰ ton.						
In Sheets	30	0	0	31	0	0
Quicksilver—₰ bottle	19	0	0		—	
Tin—₰ ton.						
English Blocks	102	0	0		nom.	
Ditto Bars (in bris.)	103	0	0		—	
Ditto Refined	104	0	0		—	
Banca	103	0	0		—	
Straits	98	0	0	98	0	0
Tin Plates—† ₰ box.						
IC Charcoal.....1 qual.	1	17	0	1	19	0
IX " .....1 qual.	2	3	0	2	5	0
IC " .....2 qual.	1	15	0	1	17	0
IX " .....2 qual.	2	1	0	2	3	0
IC Coke	1	9	0	1	11	0
IX "	1	15	0	1	17	0
Canada Plates.....₰ ton.	19	0	0		—	
" at works	18	10	0		—	
Iron—₰ ton.						
Bars Welsh, in London	12	0	0		—	
" to arrive	11	10	0	11	15	0
Nail Rods	12	5	0		—	
Nail Rods, Staff'd in L'ndon	12	10	0		—	
Bars	12	10	0	13	0	0
Hoops	13	15	0	15	0	0
Bars at Works	11	10	0		—	
Hoops ditto	12	15	0	14	0	0
Sheets, single, and plates	14	0	0	15	10	0
Pig, No. 1, in Wales	5	0	0	6	10	0
Refined metal ditto	7	0	0	8	0	0
Bars, common ditto	10	10	0	11	0	0
Do, merchant, Tyne or Tees	11	0	0	11	10	0
Ditto, Railway, in Wales	9	10	0	10	0	0
Ditto, Swedish, in London	19	0	0	19	5	0
To arrive	19	0	0	19	5	0
Pig, No. 1, in Clyde	5	0	0	5	5	0
Ditto, f.o.b., Tyne or Tees	4	10	0	5	10	0
Ditto, Nos. 3, 4, f.o.b.		—			—	
Railway Chairs	5	0	0	5	5	0
" Splices	12	10	0	14	0	0
Indian Ch'coal Pigs in L'don		—	0		—	
Steel—₰ ton.						
Swedish, in kegs (rolled)		—			—	
Ditto (hammered)	20	10		21	0	0
Ditto, in faggots	21	15	0		—	
English, spring	23		0	45		
Lead—₰ ton.						
English Pig, common	21	15	0	22	0	0
Ditto, W	23	0	0		—	
Ditto, W	23	10	0		—	
Ditto, Sheet	23	10	0	24	5	0
Ditto, Red Lead	23	10	0	23	15	0
Ditto, White	30	0	0	32	0	0
Ditto, Patent Shot	26	10	0	27	0	0
Spanish	21	15	0	22	0	0

* At the works 1s. to 1s. 6d. per ton less. Terne plates 2s. per box below tin plates of similar brand. ‡ Nominal. Add 6*s*. for each *X*.

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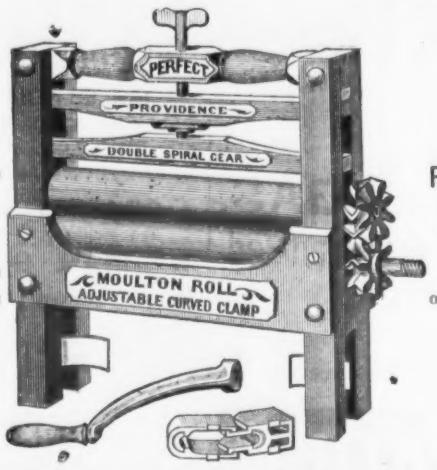

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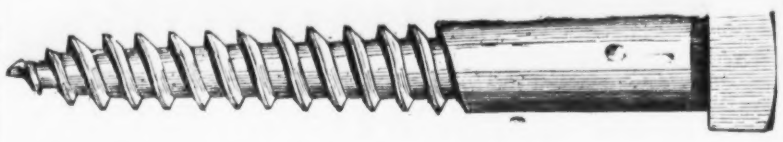

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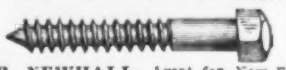

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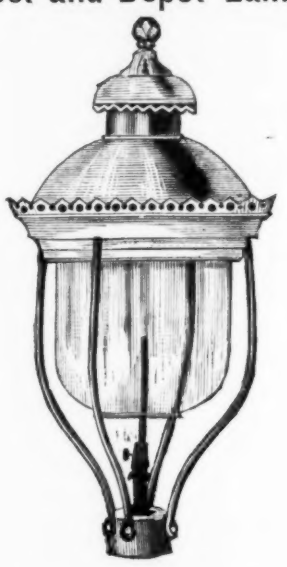

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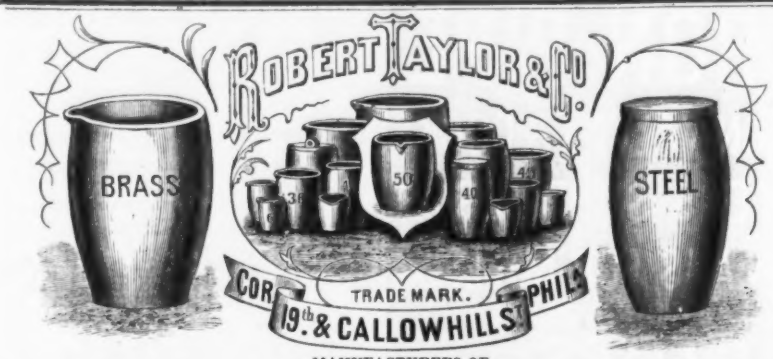

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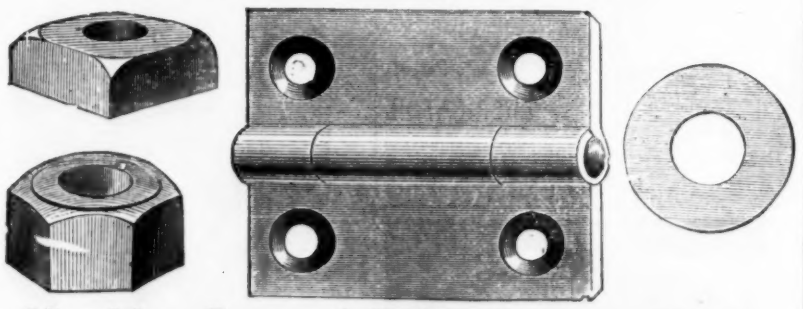

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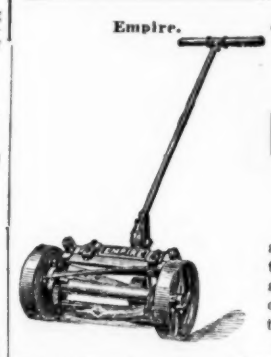

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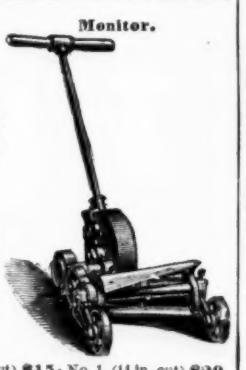

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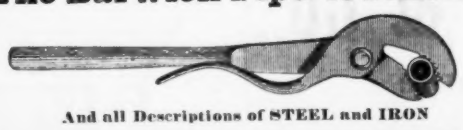

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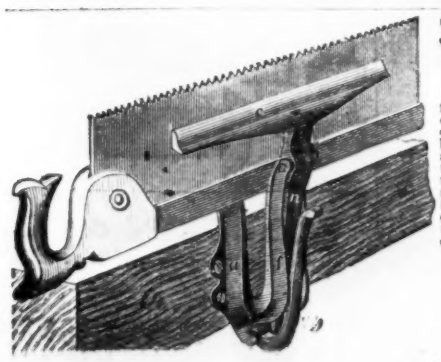

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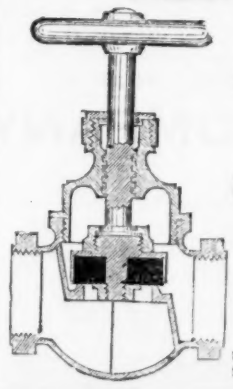

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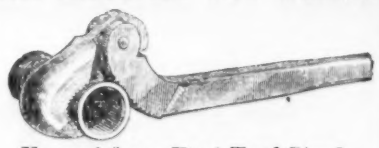

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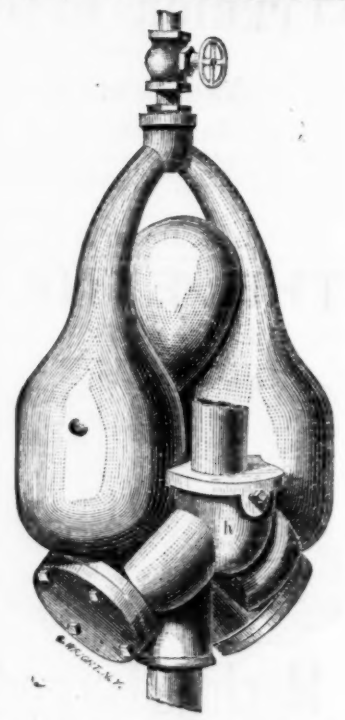

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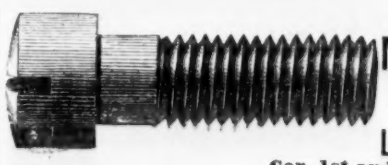

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The Iron Age Directory

and Index to Advertisements.

Recent Modifications in the Regime of Blast Furnaces.

BY M. L. GRUNER.

For several years past the minds of metallurgists have been much pre-occupied by two important modifications made in old blast furnace practice. The furnaces have been increased in hight and in diameter, and the blast is spontaneously heated to a red heat, in England especially, by means of large stoves of fire brick, prepared by Messrs. Cowper-Siemens and Mr. Whitwell.

Successive transformations in these two directions have resulted in what is deemed exaggeration by metallurgists, such as Mr. Lowthian Bell, whilst there are others who consider there is no limit save practical possibility. This divergence of opinion has been made known by the publications of the Iron and Steel Institute—an association frequented by Bessemer, Bell, Menelaus, Williams, Snelus, Parry, Siemens, Cochrane and others, well known as leading men in the iron industry of Britain. The question is one well worthy of careful examination and study in reference to the chemical and calorific reactions which come into play in these enormous apparatus. I shall, for this purpose, make use of the series of highly interesting memoirs which Mr. Lowthian Bell has published in the Journal of the Iron and Steel Institute,* and compare them with my own personal researches on the same subject, some of them given, for many years, in my course of lectures at the Ecole des Mines of Paris, and others recently published in the *Recueil des savants estrangers*, and in the *Annales de physique et de chimie*.†

SUCCESSIVE ENLARGEMENTS OF BLAST FURNACES.

Blast furnaces working with charcoal as fuel are seldom more than 30 to 35 feet high, nor have they more than 800 to 1200 cubic feet capacity. In Austria, in Russia, and in Sweden, where circumstances admit of a great accumulation of fuel, the hight is carried to 45 feet, and the cubic contents to 1800 to 2200 feet. In coal districts the furnaces have been, from the beginning, made larger; and yet the ordinary furnaces of Staffordshire have not more than 2200 to 2500 cubic feet capacity, with a hight of 38 to 42 feet; and even the largest do not exceed 3500 to 5000 cubic feet. In 1830, the capacity was not more than 2000 cubic feet as an average, and in Wales 2300 to 2500 cubic feet. In 1860, however, M. Law and I found that there was a decided tendency to enlargement of the furnaces. In Scotland there were furnaces of 3000 cubic feet, and even 7000 cubic feet; and in Wales the furnaces were of 3000 and up to 5000, with some few as large as 7000 and 7750. These successive enlargements were made with the special object of increasing production, and we were convinced that, in fact, the yield had increased in proportion to the internal capacity. In the enlarged as in the smaller furnaces in England, the yield was, on the average, a ton of Nos. 1 and 2 iron for 7 to 8 cubic metres (245 to 280 cubic feet) capacity, a ton of forge iron (gray) Nos. 3 and 4 for 210 to 245 cubic feet, and a ton of mottled forge pig for 175 to 210 cubic feet capacity.

By comparing together a great many Continental furnaces, I had previously arrived at the same results. In my lectures these figures were given as results to be used in determining the dimensions of blast furnaces.

In 1851, the first blast furnace was erected in Cleveland, by Messrs. Bolckow & Vaughan, who built it 42 feet high and of 6200 cubic feet capacity.

From 1853 to 1860, a great many furnaces were erected in this district, but none of them were carried to a greater hight than 58 feet, with a capacity of 7000 cubic feet, and the greater number were about 50 feet high, with 5200 to 6000 cubic feet capacity.

In 1853, Messrs. Bell Brothers founded the Clarence Works, and erected several furnaces 48 feet high, and of 6200 cubic feet capacity.

On the other hand, beginning from 1861, there took place a prodigious enlargement of the furnaces, of which we may give the following examples: In 1861, Messrs. Whitwell & Co. built three furnaces at Thornaby, 60 feet high, and 13,000 cubic feet capacity. In 1862, Messrs. Bolckow & Vaughan carried the hight to 75 feet, and the capacity to 12,000 cubic feet.

In 1864 Mr. Samuelson built his first furnace, at Newport, 68 feet high and 15,300 cubic feet capacity, and Mr. Thomas Vaughan carried the hight to 78 feet and the capacity to 15,750.

In 1866, Messrs. Bolckow & Vaughan adopted the lofty type of 96 feet, with only 15,000 cubic feet capacity; and Messrs. Hopkins, Gilkes & Co., at Tees-side, gave 76 feet high and 20,000 cubic feet capacity.

In 1867, the furnaces at Norton were made 78 feet high and 26,000 cubic feet.

In 1868, Messrs. Bolckow & Vaughan enlarged their two furnaces of 1866, the one to 26,000 cubic feet, the other to 29,000 cubic feet capacity, the original hight being retained, viz., 96 feet.

In 1870, Mr. Cochrane erected a monster furnace at Ormesley, 92 feet high, and 41,000 cubic feet, and at Ferryhill, westward of Middlesborough, with a greater hight they combined a smaller capacity—106 feet high, 33,000 cubic feet; and lastly, in 1871, Mr. Cochrane built a furnace 92 feet high and 42,500 cubic feet capacity.

The internal section of the greater number of these furnaces is given in the plate, copied from the historical account of the gradual development of the blast furnaces in Cleveland, by Mr. J. Gjers.‡ We see by these that the form is very various—lofty furnaces almost cylindrical alongside of barrels very stumpy, enlarged at the belly, and much contracted at the top. These forms, as well as the hight, the total capacity, the mode of charging, etc., have, as we all know, a certain influence in the working of the furnaces. The yield and consumption of raw material vary with these elements. Unfortunately, the short notice of M. Gjers does not give any details on this subject, not even an indication of the maximum yield; but this incompleteness I have, in part at least, been able to supplement by data given in the Memoirs of Mr. Bell, and the reports of the discussions which these memoirs gave rise to at meetings of the Iron and Steel Institute.

What strikes us immediately is, that by common consent it is allowed that the yield of these big furnaces does not increase in the proportion of their capacity. Thus, at Clarence Works, Mr. Bell's own works, we find, for four types of very different diminsions from each other, yielding forge iron Nos. 3 and 4, the yields as follows:

Elements of the furnace.	Old furnace of 1853.	High furnace 1866.	High furnace of 1865.	High furnace of 1870.
Total cap...	6000 c. ft.	11,500 c. ft.	15,800 c. ft.	27,000 c. ft.
Hight.....	48 ft.	80 ft.	80 ft.	80 ft.
Product. in 24 hours..	30 tons.	38·6 tons	50 tons	60 tons
Consum. of coke per ton iron..	29 cwts.	22½ cwt.	22½ cwt.	22½ cwt.
Internal cap. per ton iron yielded in 24 hours..	190 c. ft.	300 c. ft.	330 c. ft.	390 c. ft.

On the other hand, the numerous furnaces of Messrs. Bolckow & Vaughan and those of Ferryhill, in which the same ores and the same coke are used as at Clarence, the blast being heated to the same temperature of 400° C. to 450° C., and the pig being also Nos. 3 and 4, gave the following results:

Elements of the furnaces.	Blast furnaces of Messrs. Bolckow and Vaughan.		Old furnace at Ferryhill.	New furnace at Ferryhill.
	Built, 1865.	Built, 1868.		
Total cap.	15,000 c. ft.	25,800 c. ft.	17,000 c. ft.	32,000 c. ft.
Hight.....	95 ft.	95 ft.	80 ft.	80 ft.
Yield in 24 hours	46 tons	52 tons	50 tons	73 tons
Con. of coke per ton of pig.....	22½ cwt.	22½ cwts.	22½ cwt.	20* cwt.
Internal cap. per ton yield in 24 hrs.	320 c. ft.	490 c. ft.	315 c. ft.	430 c. ft.

* This amount is uncertain.

Lastly, by comparing the three successive types put up by Mr. Samuelson, at Newport, we again found the same figures:

	c. ft.			c. ft.
An old furnace of	5,000	yields,	23 tons in 24 hrs.	=218 p. t'n
Another fur., 1864,	15,800	"	45 " "	=342 p. t'n
And the last fur.	30,300	"	70 " "	=430 p. t'n

Mr. Bell, in the discussion of the Iron and Steel Institute, in 1871, affirms, with perfect reason, that he "never found that a furnace of 25,000 cubic feet did twice the work as well as one of half the size."

In fact, we know that in the old furnaces of 5000 cubic feet to 7000 cubic feet capacity, the mean capacity is 210 cubic feet per ton of Nos. 3 and 4 pig, whereas, in the more modern furnaces of 10,000 cubic feet to 15,000 cubic feet, we find from 280 to 320 cubic feet capacity per ton of yield, and in the most recent furnaces of 25,000 cubic feet, the capacity per ton of yield is 420 cubic feet to 490 cubic feet. In other words, the descent of the charge requires 60 to 70 hours in the large furnaces, and only 20 to 40 in the small ones.

This extreme slowness in the descent of the charges may, in a certain point of view, have advantages. Variations in the raw material are less sensibly felt in the large furnaces. It may also happen that reduction goes on under better conditions—that the ore should arrive in the zone of fusion better prepared. But is there no limit to this successive development of the blast furnace? May not the *juste milieu* corresponding to a maximum of economy be overstepped? If the work goes on very slowly, is not the carbonic acid (CO^2) arising from the reduction of the ores exposed to be converted into carbonic oxide (CO) by contact with incandescent carbon, in proportions increasing as the descent of the charges is slow? In short, is the consumption necessarily so much the less as their dimensions are large, and the descent of the charges slow?

The figures above tabulated answer this question to a certain extent. Previously to 1860, the blast furnaces in Cleveland consumed 1·5 to 1·7 tons of coke for one ton of pig—gray forge—yielded, or, at the very least, 1·45 tons=29 cwt., according to the statement of Mr. Bell. At present the consumption in the enlarged furnaces is reduced to 1·125=22½ cwt., the blast being heated to 400° to 500° Centigrade; but it is quite certain that there is no difference in the consumption of the furnaces of 10,000, 16,000 and 28,000 cubic feet capacity, or even beyond these monstrous dimensions.

If, therefore, beyond a certain limit, the large dimensions produce neither increased yield nor economy of fuel, it does not look very rational to go on mereasing the capital for establishing furnaces with these vast dimensions. This is what has at last occurred to our neighbors on the other (English) side of the Channel. A reaction has taken place in England, at all events in those districts in which the fuel and the ore are liable to crush and compress under their own weight. Thus, at Askam-in-Furness, the hight has been reduced from 75 feet to 61; at Consett, the furnaces have been reduced from 70 feet to 55; at Workington and at Barrow, situated like Askam in the district of rich hematites of Cumberland, the body of the furnaces has, in like manner, been reduced in hight—at Workington, from 70 feet to 55, and at Barrow, from 75 to 61;* and lastly, at Creusot, a blast furnace which had been raised to 88 feet has likewise been decapitated.

These examples are sufficient to show that a certain hight is accompanied by proved inconveniences; but if we desire to appreciate at its true value the influence of these exaggerative dimensions, we must, in the first place, endeavor to form exact notions of the chemical and calorific reactions upon which the working of the blast furnace is based.—*Studies of Blast Furnace Phenomena.*

*Published in one volume complete, with index, by Messrs. Routledge, in 1872.

†Savants estrangers, t. xxii.; Annales, etc., Mai 1872.

‡Journal of the Iron and Steel Institute, Nov., 1871.

* See Journal of Iron and Steel Institute, Nov., 1871, p. 409.

Foundations for the Pittsburgh Water Works Engines.

The Pittsburgh *Commercial* thus describes the foundations for the new engine house of the new water works, which are to supply that city:

The total depth of the foundations when completed will be 19 feet 9 inches below the bed of the river. Above these will be built masonry to the hight of 43 feet; thus the total depth of the masonry from the base of the foundation to the belt course will be 62 feet 9 inches. The belt course will be 18 inches higher than the track of the Allegheny Valley Railroad.

The piers upon which the pumps will be placed are 5½ feet deep, 14 feet broad at the top and 16 feet at the base. The piers are composed of large blocks of blue stone, as is the first course of the floor placed over them, which is made of stones 30 inches thick. This course is completed. The second course, which is also nearly completed, is made of sand stone of a very superior quality, the stone being placed in the form of an inverted arch, in order to resist the tremendous upward pressure. The public generally are ignorant of the force of the upward pressure. To illustrate, we will say that the floor being 8 feet below the bed of the river, there is 28 feet of water in the river (by no means an unusual occurrence) the total upward pressure when the water is pumped out on the floor of the pumping pits amounts to 32,736,160 pounds, or 2160 pounds to the square foot. The upward pressure on one pump pit alone will be 1,516,320 pounds.

The stones in the courses forming the floor are formed of square blocks 30 inches square, from 4 to 7 feet long, and weighing from 1 to 3 tons.

The third course forming the floor, and upon which the pumps will rest directly, and upon which the partition and foundation walls of the building will rest, will be made of stone of similar dimensions. The three courses will have a depth of 7½ feet, which, with the 5½ feet depth of piers beneath, makes a total depth of 13 feet, upon which the pumps rest.

Destruction of a Foundry in Pittsburgh.—About half-past seven, on the evening of the 16th inst., the extensive foundry of Messrs. A. Garrison & Co., at Pittsburgh, was destroyed by fire. The building was an iron clad, supported by heavy timbers. The inside wood work was burned, together with a large portion of the roof, while much damage was done to machinery, patterns, &c. The firemen succeeded in saving the pattern shop, which is located a little distance from the foundry. Messrs. Garrisons' loss will reach five thousand dollars, upon which, however, there is full insurance.

Keystone Saw, Tool, Steel and File Works,

PHILADELPHIA.

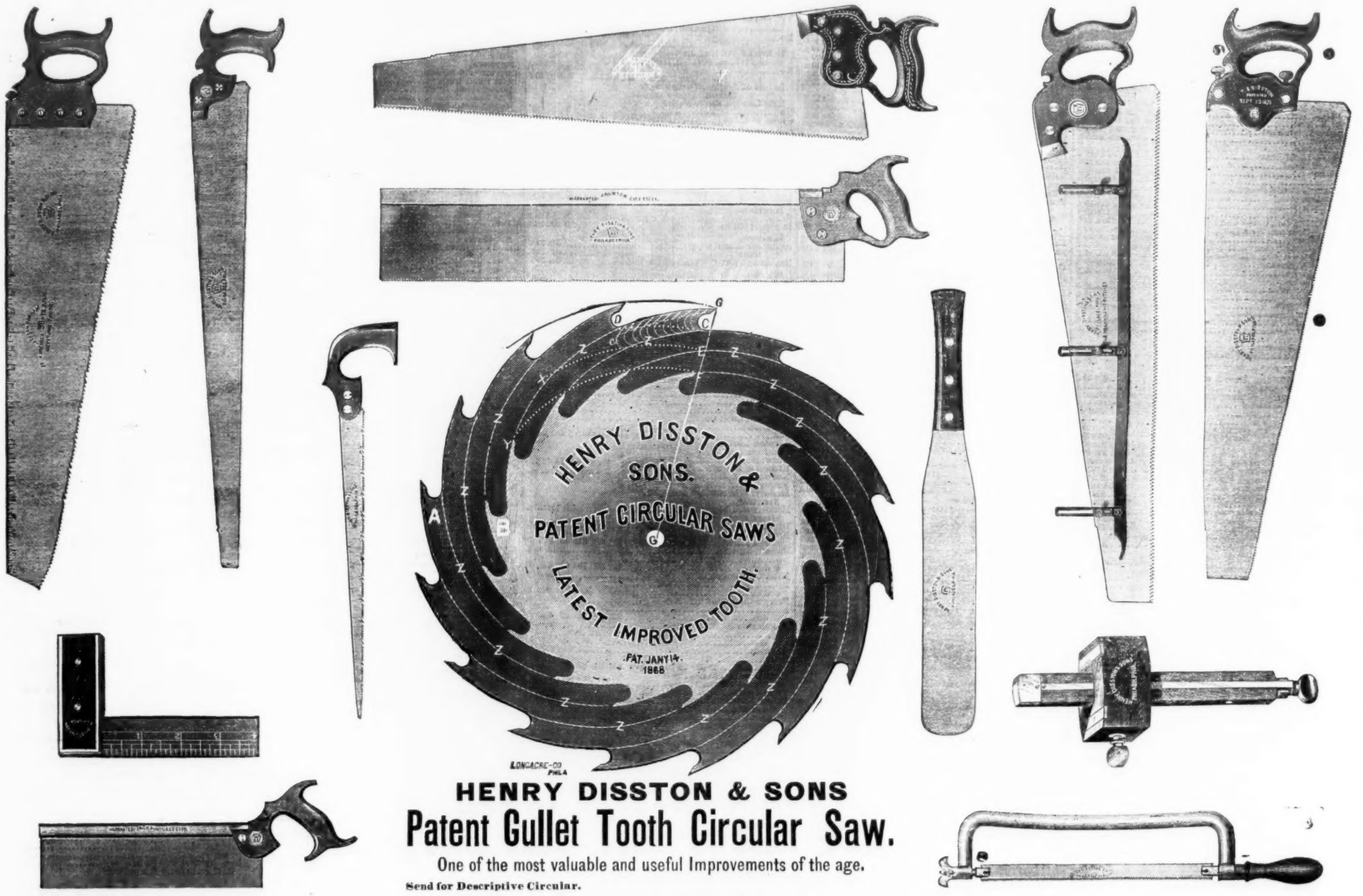
HENRY DISSTON & SONS,

MANUFACTURERS OF

Warranted Cast Steel Patent Ground and Tempered Circular Mill, Mulay, Cross-Cut, Pit and Drag Saws.

Also Hand, Panel, Rip and Back Saws, Band Saws, Butcher Saws,

Compass and Pruning Saws, Segment, Shingle and Concave Saws, Saw Mandrels, Files, and all kinds of Labor Saving Tools for keeping Saws in Perfect Order. Also Manufacturers of Sheet Steel and all articles made from Sheet Steel.

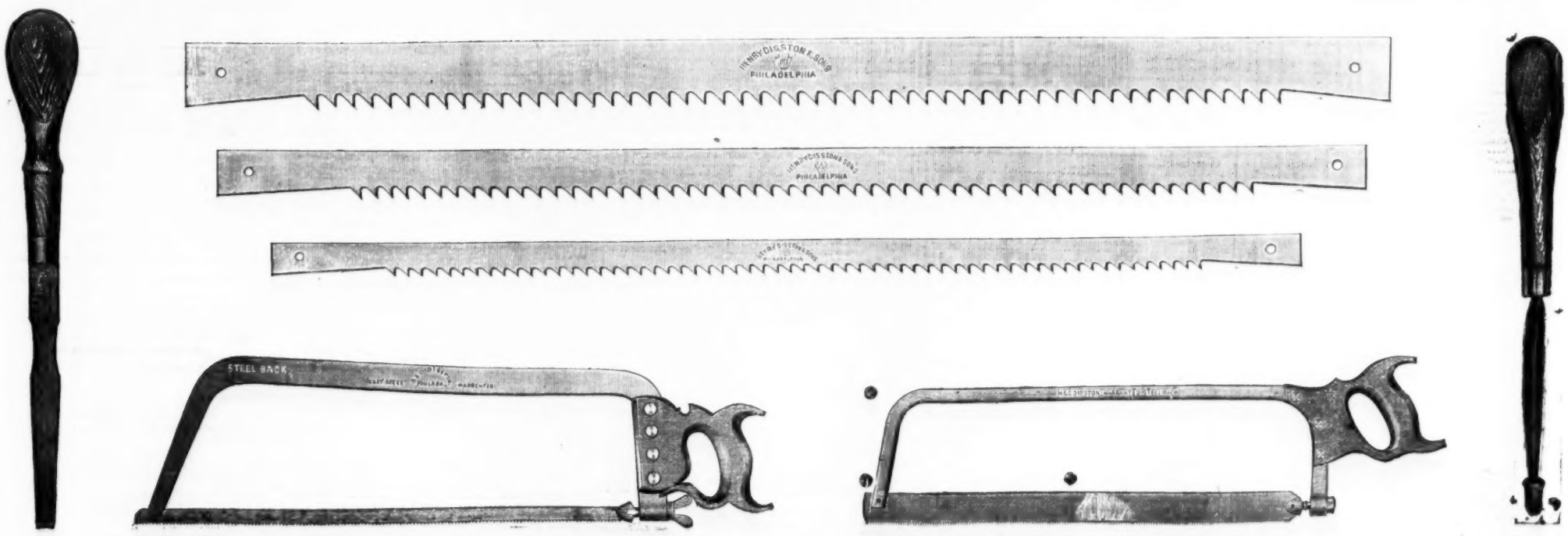


HENRY DISSTON & SONS

Patent Gullet Tooth Circular Saw.

One of the most valuable and useful Improvements of the age.

Send for Descriptive Circular.



New York Wholesale Prices, March 25, 1874.

HARDWARE.

Anvils.
Solid Cast Steel ... ℘ ℔ 14c
Wright's ... ℘ ℔ gold 12c; over 250 ℔s 12½c, gold
Armitage's Mouse Hole ... gold 11c
Wilkinson's ... ℘ ℔ gold 11½c
Eagle Anvils, ℘ ℔ 11c currency ... dis 15 @ 15&5 %

Apple Parers.
Turn Table / Lightning / Conqueror ... $8·50 ℘ doz
Reading ... ℘ doz 9 00
Union ... ℘ doz 9 00 } dis 5 %
Bay State, Paring, Coring and Slicing ... 15 00
Skeleton " " " ... 9 00
Climax Slicer ... 9 00
Bay State Peach Parer ... $11 00 @ 11 50
Lightning " " ... 11 00 @ 11 50
Peach Stoner and Halver ... 7 00

Augers and Bits.
Snell Mfg. Co. ... dis 15 @ 20 %
Russell Jennings ... dis 10 %
Douglass Mfg. Co., Extra ...
" " No. 1 ...
" " Hollow Augers ...
Cushman's Expanding Hollow Augers ... dis 20 %
Ives' Augers and Bits ... dis 30&10 %
" Gouge Lip Augers and Bits ... dis 30&10 %
" Hollow Augers ... dis 30&10 %
" Expansive Hollow Augers ... dis 30&10 %
" Expansive Bits ... dis 20&10 %
Andrews' Bits ... dis 25 %
Clark's Expansive Bits ... dis 15 %
Cook's Patent Augers ... dis 50 %
" " Bits ... dis 40 %
Shepardson's Double Cut Bits ... dis 20 %
Griswold's Patent ... dis 20 %
Cast Steel Cut Augers ... dis 30&10 %
" Auger Bits ... dis 30&10 %
Long Augers ... new list dis 30 %
Bonney's Patent Hollow ... $48 per doz—dis 25 %
Stearns' " " ... $48 per doz—dis 25 %
Morse's Bit Stock Drills ... dis 20 %
Nobles Mfg. Co. C. S. Cut Augers ... dis 30&10 %
Watrous Ship Augers ... dis 10 %

Axes.
Blood's ... $12 50 @ 14 00
Hunt's ... ℘ doz $15 00 @ 17 50 net @ dis 5 %
Collins' ... ℘ doz 11 00 @ 16 00 net @ dis 5 %
Hurd's ... ℘ doz 12 50 @ 13 50
Schweitzer Mfg. Co.'s ... ℘ doz 13 00 @ 15 00
Simmons' ... ℘ doz 12 50 @ 14 00
Morris' ... ℘ doz 12 50 @ 13 50
Red Jacket ... ℘ doz 12 00 @ 12 50
Mann's ... ℘ doz 12 50 @ 13 00
Double Bitted ... ℘ doz 21 50 @ 22 00
Powell Tool Co., "Peerless" ... ℘ doz 13 00 @ 14 50
Underhill's ... ℘ doz 12 50 @ 13 50
" Crown ... ℘ doz 13 00 @ 14 00
John Leverett's ... ℘ doz 12 50 @ 15 50
Nobles Mfg. Co. S. B. ... ℘ doz 12 50 @ 13 00
" D. B. ... ℘ doz 22 00 @ 23 00

Balances.
Chatillon's / Frary's / Morton's ... new list dis 15 %

Bands.
Plated ... new list dis 50&5 %
Iron Rim ... new list dis 15&5 %
Brass (Plated list) ... new list dis 50, 10&5 %
Oroide ... new list dis 50&5 %

Bells.
Hand, Light Brass ... dis 60&10 @ 65&10 %
White Metal ... dis 45&10 %
Globe ... dis 15&10 %
Abbe's ... dis 10&10 %
Taylor's Patent Door ... net
Western Gong ... net
Brook's Crank ... dis 10 %
" Pull ... dis 15&10 %
Hart Mfg. Co., Crank and Pull ... dis 50&10 %
Cow—Common Wrought ... dis 20&10 %
Western ... new list dis 20&10 %
Kentucky "Star" ... new list dis 20&10 %
Dodge's Genuine Kentucky ... new list dis 25 %
Yaw's Genuine ... dis 20 %
Call ... dis 15 %

Bellows.
Blacksmiths' ... dis 15 %
Moulders' ... dis 15 %
Hand Bellows ... dis 10 %

Blind Fasteners.
Van Sand's ... ℘ gross $14 00
Washburn's Patent ... ℘ gross 14 00
Merriman's ...

Blind Staples.
Boardman's Patent, ½ in. and larger ... ℘ ℔ 37 c
" " ⅜ in ... " 42 c

Bolts.
Carriage and Tire, Ætna Nut Co. ... dis 60 %
Stove, Ætna Nut Co. ... dis 10&5 %
Cast Iron Barrel, Shutter, &c. ... old list dis 40&10 %
Wrought Iron Barrel ... new list dis 50&10 %
" " Square ... new list dis 50&10 %
Wrought Iron Flush ... dis 15 %
Carriage and Tire, Common ... dis 70&10 %
" " " Norway Iron ... 50&10 %
Star, Philadelphia ... dis 50 @ 50&10 %
Eagle, Philadelphia ... dis 50 @ 50&10 %
Skelly's Phila. Norway Iron Finished Points ... dis 50&5 %
Philadelphia Pattern, P. S. & W. ... dis 50&10 %
Tire, Bessemer Steel, Hubbard & Curtiss ... dis 50 %
Carriage and Tire, R. B. & W. ... old list dis 50&5 %
Plow, R. B. & W. ... dis 30 %
Stove, R. B. & W. ... dis 10 %
" Shelton Co. Shaved Heads ... dis 15 %
Union Nut Co., old list ... dis 50&20 %
" " Stove ... dis 15 %
Machine ... dis 30&10 @ 40 %

Borax.—In cases of 100 lbs ... ℘ ℔ 18c

Boring Machines.
Kellogg's ... dis 15 %
Snell Mfg. Co., Rice's Patent ... dis 15 %
" " Regular ... dis 15 %
Douglas Mfg. Co. ... dis 20 %
Morticing Machines each ... $18 00

Bow Pins ... dis 50 %

Braces.
Barber's Patent ... dis 40 %
Wilson Mfg. Co. ... new list dis 10 %
Spofford's Patent ... dis 40 %
Noble's Patent ... dis 40 %
Bartholomew's American Ball ... dis 10&10 %
" Patent Grip ... dis 40 %
Ives' Novelty ... dis 40 %

Ball Rings ... dis 50 %

Bung Hole Borers.
Common and Ring ... dis 25 %
Enterprise Mfg. Co. ... dis 20&10 %
Ives' Tap Borers ... dis 25 %

Butchers' Cleavers.
Bradley's ... dis 25 %
Beatty's ... new list dis 10 %

2	3	4	5	6	7	8	9
$19·00	$21·50	$24·00	$27·00	$33·00	$33·50	$35·50	$40·00

Hart Mfg. Co. ... dis 45&10 %

0	1	2	3	4	5	6
$25·25	$29·75	$33·25	$35·75	$43·55	$48·50	$54·00

Butts.
Wrought Brass ... new list dis 30 %
Cast Fast Joint, Narrow ... dis 50 %
" Broad ... dis 50 %
Cast Loose Joint ... dis 60 %
" " Mayer ... dis 50 %
" " Parliament ... dis 50 %
Loose Pin ... dis 40&10 %
Wrought Fast Joint, Narrow ... dis 30 %
Wrought Broad ... dis 35 %
" Loose Joint ... dis 35 %
Wrought Table and Back Flaps ... dis 30 %
Palmer Blind Butts ... dis 30&10 %
Nicholson Blind Butts ... dis 40&10 %
Parker's Blind Butts ... dis 45&10 %
Huffer's Blind Butts ... dis 30&10 %
A. S. Parker's ... dis 40&10 %
Clark's Surface Blind Hinges, Nos. 1, 3 and 5 ... dis 50 %
" " " " No. 20 ... dis 55&10 %
" Mortise " " ... dis 30&5 %
Seymour's ... dis 40&10 %
Shepard's ... dis 50 %
Garretson's ... dis 60 %
The American Spiral Spring Butt Co. ... dis 20 %
Standard ... dis 40&10 %

Caps—Percussion, per 1000.
G. D. ... 40c
Ely's E. B. ... 1-4s. 58c.; 1-10s, 65c., gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·52½c., gold
Colt's ... 1-10s, 70c., gold

Cartridges.
Metallic ... dis 50 @ — %

Cards.—Horse and Curry ... dis 25&10 %
Cotton ... new list dis 10&10 %
Wool ... new list dis 10&10 %

Carpet Stretchers.
P. S. & W. ... per doz $2 00; dis 33⅓ %

Casters.
Iron and Wood Wheel, Bed ... dis 33⅓&10 %
Brass and Porcelain Wheel, Bed ... dis 33⅓&10 %
Deep Socket, Bed ... new list dis 20&10 %
Iron and Wood Wheel Plate ... new list dis 33⅓&10 %
Brass Wheel Plate ... new list dis 33⅓&10 %
Porcelain Wheel Plate ... new list dis 33⅓&10 %

Cattle Leaders ... dis 50&10 %

Chain
English Coil, by the cask ... net gold

℘ ℔	13	9½	9	8½	8¼	8c
	3-16	¼	5-16	⅜	7-16	½

Trace, 6½-10-2 ... by the cask, ℘ pair, gold, 62c
Trace, 7-10-2 ... by the cask, ℘ pair gold, 67c
Galvanized Pump Chain ... ℘ ℔ 14c
German Halter Chain ... new list, Jan. 1, dis 10 %
German Coil ... new list, Jan. 1, dis 10 %
Jack Chain, Iron ... dis 50 %
" Brass ... dis 40 %

Chalk.
White ... ℘ gross, 50c
Red ... ℘ gross, 75c
Blue ... ℘ gross, 90c
Crayons ... ℘ gross, 14c

Cherry Stoners.
"Family" ... ℘ doz $4·00

Chisels.
Socket Firmers ... dis 60 @ 60&10 %
Socket Framing ... dis 60 @ 60&10 %
Socket Corner ... dis 60 %
Tanged Firmers ... dis 40 to 40&10 %
Butcher's ... $5·50 to £ gold—new list
Newbould's ... $5·50 to £ gold
Spear & Jackson's ... $5·50 to £ gold—new list

Clips, Axle.
Norway or Best ... dis 25 %
Superior ... dis 50 %
"Star," Superior Philadelphia ... dis 45&5 %

Coal Shovels.
Iron Handled ... ℘ doz, $ 85 @ 1 25
Wooden Handled ... ℘ doz, 1 00 @ 2 00

Coal Hods.—Smith, Burns & Co. ... dis 35 %

No.	14	15	16	17	18	
Japanned	$9·00	9·75	10·50	12·00	13·50	per doz
Galvanized	13·00	14·50	15·50	17·50	19·50	"

Morning Glory ... dis 30 %

No.	15	16	17	
Japanned	$12·50	13·50	15·50	per doz
Galvanized	18·00	19·50	21·00	"

Cockeyes ... dis 30 %

Cocks.
Brass Racking ... dis 25&10 %
Lock and Globe ... dis 25&10 %

Coffee Mills.
Board and Box ... dis 15 %
Increase Wilson's ... new list dis 15 %
Selsor's Pat ... $9·50, $10·50—dis 20 %
French Steel ... dis 15 %
Swift's ... dis 20 %
"American" ... dis 20 %

Compasses and Dividers.
Bemis ... dis 35 %
Excelsior ... dis 30 %
Peck, Stow & Wilcox ... dis 25 %

Coopers' Tools.
Bradley's ... dis 15 @ 20 %
Chas. E. Little ... dis 15 @ 20 %
Swan & Brombacher ... dis 15 @ 20 %

Corn Knives and Cutters.
Bradley's ... dis 10 %

Crow Bars.
Cast Steel ... ℘ ℔ 11c.net
Iron, steel points ... ℘ ℔ 7c

Crucibles.
Gautier & Co. ... ℘ No. 5½c

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass ... dis 15 %
Fitch's ... dis 20 %
Rubber ... ℘ doz, $9·00—dis 10 %
Schweitzer Mfg. Co. ... dis 20 %

Curtain Pins.
Silvered Glass ... dis 55 %

Cutlery.
American Table ... net list
American Pocket ... dis 25 %

Dog Collars.
Embossed Gilt ... dis 10 %
Leather ... dis 20 %

Door Springs.
Gray's ... $7·50 per doz—dis 40&10 %
Torrey's Patent ... $7·50 ℘ doz—dis 40&10 %
Palmer's Japanned No. 6 ... ℘ doz $5·00
" Coppered " ... " 6·00
" Silvered " ... " 8·00
Challenge.—
Japanned ... ℘ doz $4 00 @ 6 00
Bronzed ... ℘ doz 5 00 @ 7 00
Nickel Plated ... ℘ doz 6 50 @ 9 00
1 Gross lots ... dis 10 %
5 Gross lots ... dis 20 %

Drawing Knives ... dis 60 @ 60&10 %
Bradley's ... dis 25 %
Adjustable Handled ... dis 10 %

Drills.
Ingersoll's Ratchet ... dis 25 %
Moore's Triple Acting Ratchet ... dis 20 %
Whitney's Ratchet ... dis 20 %
Blacksmiths' ... each $3 25 net

Drug Mills.
American Drug Mills ... dis 20 %

Egg Beaters.
Monroe's ... ℘ doz net $8·25 @ 8·50
Dover ... ℘ doz net $6·00
National ... ℘ doz $4·50—dis 10 %
Peerless ... ℘ doz net $4·00

Emery.
Genuine Chester—Regular Nos ... ℘ ℔ 7c } dis 5 @ 10 %
" Flour and FF ... ℘ ℔ 4c }
Washington Mills—Regular Nos ... ℘ ℔ 8c
" Flour ... ℘ ℔ 5c

Enameled and Tinned Ware.
Kettles ... dis 30 @ 25 %
Sauce Pans, Glue Pots, &c ... dis 15 %

Faucets.
Cork Lined, Wood ... dis 60 %
Fenn's ... dis 50 %
" Cork Stops ... dis 40 %
Star ... dis 55&10 %
Frary's Patent Petroleum ... dis 10&10 %
Taylor's Pattern " ... dis 20&10 %
Wood and Metallic ... dis 40 %

Felloe Plates ... ℘ ℔ 14c; dis 10 %

Files.
Nicholson ... $5 00 to £ currency—dis 10 %
Newbould's ... 5 25 to £ gold
J. & Riley Carr's ... 5 50 to £ gold
" " Rasps ... 5 75 to £ gold
Stubs' ... 8 50 @ 9 00 to £ gold
Butcher's ... 5 50 to £ gold
Walter Spencer & Co.'s "Diamond" ... 5 25 to £ gold
Spear & Jackson's ... 5 50 to £ gold
Hargreaves, Smith & Co.'s ... 5 00 to £ gold
Jowitt's ... 5 25 to £ gold
"Western" ... 5 00 to £ net
W. K. & C. Peace's "Imperial" ... 5 25 to £ gold
R. Ibbotson ... 5 00 to £ gold
Beam & Murray, "Cyclops" ... 4 85 to £ gold
Fisher's ... 4 75 to £ gold
Goodlad's ... 4 00 to £ gold
Moss & Gamble ... 5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) ... 5 00 to £ gold
" " Horse Rasps ... 5 50 to £ gold

Fluting Machines.
Acme ... $7 00 each net
Manville, No. 2 ... 7 00 each net
Knox, with 4-inch Rolls ... 5 00 each net
" " 6 " ... 6 00 each net
O. K. ... 6 50 each net
Peerless, 4-inch Rolls ... 4 00 each net
" 5 " " ... 5 00 each net
Excelsior, No. 1 ... 4 75 each net
" No. 2 ... 6 50 each net
Diamond ... 7 50 each net
Climax 7-inch Rolls ... 8 00 each net
" 4½ " ... 6 50 each net
Empire ... 4 00 each net
Eureka, No. 1, 7-inch Roll ... 8 00 each net
" No. 2, 5-inch Roll ... 6 00 each net
K. F. M., 4½-inch Roll ... 5 50 each net
" 6-inch Roll ... 6 00 each net
Myers' Fashion Fluter, 4½-inch Rolls ... 8 00 each net
" Convex Brass Fluter, Sad Iron attachment ... $1·75
Domestic Fluter ... $1·75 each net
Fairy, Self-Heater ... 8 00 each net
Geneva Hand Fluter ... $15 00 per doz net
Champion, 6 inch rolls ... $6 00 each net

Forks.
Hay, Manure & Spading ... dis 25 %
Plated A 1 ... dis 30&5 %

Fry Pans.—P. S. & W.
Tinned ... dis 25 %

℘ doz	$3·00	3·25	3·62	4·00	4·50	5·00	5·50	6·00	7·50
No.	0	1	2	3	4	5	6	7	8

Smith, Burns & Co., "Excelsior" Polished ... dis 35 %

℘ doz	$3·70	4·00	4·70	5·30	6·00	7·00	8·00	9·00
No.	1	2	3		5	6	7	8

Gauges.
Marking ... dis 40&10 %
Wire ... dis 10 %

Hammers.
Emmet Hammer Co. ... dis 10 %
Maydole's ... dis 5 %
Cheney's ... new list net
Verree ... dis 5 %
Yerks & Plumb ... new advanced list dis 5 @ 10 %
Minot & Co. ... dis 15 %

Handles.
Hammer and Hatchet ... dis 10 %
Quakertown, Axe, Pick and Sledge ... dis 10 %
" Hammer and Hatchet ... net
Greensboro', Axe, Pick, Hammer, &c ... dis 10 %
Woolworth Axe, Pick and Sledge ... dis 10 %
Brad Awl ... per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td ... " 5 25—dis 10&10 %
" " " large ... " 6 25—dis 10&10 %
Apple " " ass'td ... " 6 00—dis 10&10 %
" " " large ... " 7 00—dis 10&10 %
Socket " " ass'td ... " 8 50—dis 10&10 %
" Framing " ... " 6 00—dis 10&10 %
File ... " 3 50—dis 10&10 %
Auger ... " 5 50—dis 10&10 %
" large ... " 6 50—dis 10&10 %

Harness Snaps.
Henshaw's ... dis 25&10 %
Judd's ... dis 40 %
Fitch's ... dis 30 %
Hotchkiss' ... dis 10 %
Andrews' ... dis 25 %
Sargent's ... new list dis 50&10 %

Hatchets.

	Nos.				
Isaiah Blood ... dis 10 %					
Shingling,	1 2 3	℘ doz	$7 50	8 00	8 50
Claw,	1 2 3	℘ doz	8 50	9 00	9 50
Lathing,	1 2 3	℘ doz	7 50	8 00	8 50
Hunt's ... net					
Shingling,	1 2 3	℘ doz	$7 25	8 00	8 75
Claw,	1 2 3	℘ doz	7 75	8 50	9 25
Lathing,	1 2 3	℘ doz	7 50	8 25	9 00
Hurd's ... dis 20 %					
Shingling,	1 2 3	℘ doz	$8 00	8 50	9 00
Claw,	1 2 3	℘ doz	9 00	9 50	10 00
Lathing,	1 2 3	℘ doz	8 00	8 50	9 00
Newark's Edge Tool Co.'s ... dis 25 %					
Shingling,	1 2 3	℘ doz	$6 50	7 00	7 50
Claw,	1 2 3	℘ doz	7 25	7 75	8 25
Lathing,	1 2 3	℘ doz	6 50	7 00	7 50
Yerks & Plumb ... dis 10 %					
Shingling,	1 2 3	℘ doz	$7 00	7 50	8 00
Claw,	1 2 3	℘ doz	7 50	8 00	8 50
Lathing,	1 2 3	℘ doz	7 00	7 50	8 00

Simmon's ... dis 10 %

	Nos.					
Shingling,	0 1 2 3	℘ doz	$7 50	8 00	8 50	9 00
Claw,	1 2 3	℘ doz		9 00	9 50	10 00
Lathing,	1 2 3	℘ doz		8 00	8 50	9 00
Broad,	1 2 3	℘ doz		9 00	10 00	12 00
"	4 5 6	℘ doz		14 00	16 00	18 00
"	7 8	℘ doz		20 00	22 00	

	Nos.				
Elephant ... dis 25 %					
Shingling,	1 2 3	℘ doz	$8 00	8 50	9 00
Claw,	1 2 3	℘ doz	9 00	9 50	10 00
Lathing,	1 2 3	℘ doz	8 00	8 50	9 00
J. P. Verree & Co. ... dis 5 %					
Shingling,	1 2 3	℘ doz	$7 00	7 50	8 00
Claw,	1 2 3	℘ doz	7 50	8 00	8 50
Lathing,	1 2 3	℘ doz	7 00	7 50	8 00
Underhill's ... dis 10 %					
Shingling,	1 2 3	℘ doz	7 25	8 00	8 75
Claw,	1 2 3	℘ doz	7 75	8 50	9 25
Lathing,	1 2	℘ doz	11 00	12 00	

Hinges.
Wrought Strap and T ... dis 25&7½ %
Providence Plate. { 6 and 8 in. list 11c. / over 8 in. list 9½c. } dis 10&5 @ 10&10 %
Screw Hook and Strap { 8, 10, 12 in. 8½c / 14 to 36 in. 7c } ... net
Heavy Welded Hook { 8 to 12 in. 9c / 14 in. & up, 8½c } dis 10 %
Screw Hook and Eye { ⅝ to 1 in., 9½c / ½ in. 10½c / ⅜ in. 12½c } ... net

Hoes.
Solid Shank, C. S. ... ℘ doz $8 00—dis 20 @ 30 %
Socket ... ℘ doz 9 00—dis 20 @ 30 %
Riveted Eye ... ℘ doz 5 00—dis 20 @ 30 %
Grub ... dis 20 %
Planters'—Winsted ... add 10 %
Scovill ... add 33⅓ %
Scovill Pattern (Winsted) ... add 20 %

Hooks.
Belt ... dis 50 %
Bench—Hotchkiss' $5 00 ℘ doz ... dis 10 %
Bench—Weston's No. 1, $6·50; No. 2, $7·00 per doz net
" —McGill's ... $3 00 per doz, dis 10 %
Wardrobe, Japanned ... new list dis 55&5 %
Hat and Coat " ... new list dis 55&5 %
Wrought Staples and Hooks and Staples ... dis 60&10 %
Screw Hooks and Eyes, revised list ... dis 70 %
Grass ... dis 20 %
Whiffletree—Patent ... dis 30 %

Horse Nails.

Putnam's. No.	5	6	7	8	9	10
	22c	28c	26c	25c	24c	23c
In lots 2000 lbs. dis. 5 %.						
Ausable No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c
Pointed & finished	31c	28c	26c	25c	24c	23c
Clinton	22c	19c	17c	16c	15c	14c
In lots of 1000 lbs. 5 % discount.						
Brundage. No.	5	6	7	8	9	10
	29c	26c	24c	23c	22c	21c
In lots of 500 lbs., dis. 5 %.						
American Pressed. No.	5	6	7	8	9	10
	23c	20c	20c	20c	20c	20c
In lots of 1000 lbs. dis 5 %.						
Perkins Finished (ready to drive). No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c
In lots of 1000 lbs. dis 5 %.						
Buffalo Forged. No.		6	7	8	9	10
		28c	26c	25c	24c	23c
Globe (Pointed and Polished). No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c
In lots of 1000 lbs., 5 % discount.						
National (Pointed and Polished), Extra Finish. No.	5	6	7	8	9	10
	30c	27c	25c	24c	23c	22c
In lots of 1000 lbs., dis 5 %.						
Vulcan (Blued, pointed, ready to drive). No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c
In lots of 500 lbs., 5 % discount. " 1000 lbs 7½ % discount.						
New London Horse Nails. No.		6	7	8	9	10
Great Western		27c	25c	24c	23c	22c
U B		29c	27c	26c	25c	24c
In lots of 1000 lbs., dis 5 %.						

Star Brand ... ℘ ℔ 16c
Morgan ... 14c

Horse Shoes.
Burden ... ℘ keg, $5 87½
R. I. Horse Shoe Co., Perkins Pattern ... ℘ keg, 5 87½
" " R. I. Pattern ... ℘ keg, 6 37½
Mule Shoes ... ℘ keg, 6 87½

Kettles.
Brass ... ℘ ℔ 55c net
In lots of 500 ℔s ... ℘ ℔ 50c net

Knives.
Ames' Butcher Knives ... dis 20 %
" Shoe " ... dis 15 %
Hay and Straw, "Wadsworth's" ... dis 20 %

Knobs.
Base—Common ... net
" Plush Tip ... dis 10 %
" Elastic End ... reduced list dis 10&10 %

Ladles.
Melting ... dis 20 %

Lanterns.
Brady's Patent ... dis 10 %
Ætna ... dis 10 %
Yankee ... dis 10 %
De Beque ... dis 10 %

Locks and Latches.
Cabinet—Eagle ... dis 35 %
Cabinet—Gaylord ... dis 25 %
Trunk ... dis 10 %
Continental ... dis 15 %
Shepardson's ... dis 20 %
American Lock Co. ... dis 33⅓ %
Plate ... dis 25 %
Pad ... new list dis 50, and 2 % for cash
Trenton Lock Co. / Branford / Norwich / Russell & Erwin / Norwalk / Nashua / Mallory, Wheeler & Co. } New list dis 45 %. 2 % extra for cash.

Mallets.
Hickory and Lignumvitæ ... dis 10&10 %

Meat Cutters.
Dixon's (P. S. & W.) ... dis 10 %

No.	1	2	3	4
℘ doz	$14 00	$17 00	$19 00	$30 00

Hales' ... dis 25 %

No.	11	12	13
℘ doz	$27 00	$33 00	$42 00

Miles Challenge ... dis 20 %

No.	1	2	3
℘ doz	$22·00	$30·00	$40·00

Perry's Champion (P. S. & W.) ... dis 10 %

No.	200	300	400
℘ doz	$22 00	$27 00	$40 00

Woodruff's (P. S. & W.) ... dis 10 %

No.	100	150
℘ doz	$15 00	$18 00

American ... dis 25 @ 25&5 %

No.	1	2	2½	3	4	5
Each	$6 00	$9 00	$14 00	$15 00	$30 00	$75 00

Molasses Gates.
Stebbins' Pattern ... dis 60&10 %
Tinned ends ... dis 40&10 %
Patent Self-Measuring ... per doz $42 00—dis 20&10 %

Mortars and Pestles.
Iron ... net

Mouse Traps.
Wood Choker ... ℘ doz holes, 16 @ 18c
Round, Wire ... ℘ doz $ 50 to 2 00 net
Square, " ... ℘ doz 2 00 to 2 50 net
Cage, " ... ℘ doz 2 50, dis 10 %

Nails.—See Trade Report.

Nuts and Washers.
Nuts ... large, 5½c; small, 7½c off list.
Washers ... large, 7c; small, 9c off list.

Oil Stones.
Washita No. 1 ... ℘ ℔ 22c
" Slips ... ℘ ℔ 44c
Hindostan ... ℘ ℔ 6c dis 10&10 %
Slips ... ℘ ℔ 10c dis 10&10 %

Oilers.
Olmsted's ... new list dis 25&10 %
Broughton's ... dis 25&5 %
Malleable ... per doz $5 00 net
Common Tin ... dis 30 %
" Zinc ... dis 30 %
" Brass and Copper ... dis 30 %

Picks.

Washoe R. R. ... dis 25 % ... Nos.	1	2	3	4	5	
℘ doz	$14·00	15·00	16·00	17·00	18·00	
Washoe Coal, dis 20 %	$8·50	9·00	10·00	11·00	13·00	15·00

Picture Nails and Knobs.
Richards' Patent ... dis 40 @ 40&10 %

Pinking Irons ... per doz $3 00—dis 60&10 %

Planes.
Chapin's, 1st quality ... dis 30 %
Sandusky Tool Co., 1st quality ... dis 30 %
" " 2d " (Ogontz) ... dis 40 %
Ohio Tool Co., 1st quality ... dis 30 %
" " 2d quality (Sciota) ... dis 40 %
Owasco Tool Co., 1st quality ... dis 30 %
" " 2d quality ... dis 40 %
Howland's, 1st quality ... dis 30 %
Bailey's Patent Adjustable ... dis 20&10 %
Plane Irons, Butcher's ... $5 50 to £ gold—new list
" Chapin's ... dis 10&10 %
" Ohio Tool Co. ... dis 10 %
" Spear & Jackson's ... 5 50 to £ gold—new list
" Sandusky Tool Co. ... dis 10 %

Plumbs and Levels
Chapin's ... dis 60&10 %
Standard Rule Co.'s New Adjustable ... dis 50&10 %
Stanley Rule and Level Co. ... dis 60&10 %

Pumps.
Douglas Cistern, etc. ... new list dis 25 %
" S. & F. ... new list dis 20 %

Rakes.
Cast Steel ... dis 30 %

$8 00	9 00	10 00	11 00	
8	10	12	14	teeth.

Razor Straps.
Genuine Emerson ... dis 25 %
" " in 5 gross lots ... dis 30 %
Hunt's ... dis 35 %
Chapman ... dis 10 @ 15 %

Rivets.
Iron and Tinned ... dis 25 %
Copper Rivets and Burrs ... new list dis 10 %

Rods.
Stair ... new list dis 20 %
American Patent ... dis 30 %

Rope. Manufacturers' List
Manila ... ½ inch and larger ℘ ℔ 16½c
" ... ⅜ inch ℘ ℔ 17 c
" ... ¼ and 5-16 inch ℘ ℔ 17½c
" Lath Yarn ... ℘ ℔ 16 c
" Hay Rope ... ℘ ℔ 17 c
Sisal ... ½ inch and larger ℘ ℔ 15½c
" ... ⅜ inch ℘ ℔ 16 c
" ... ¼ and 5-16 inch ℘ ℔ 16½c
" Hay Rope ... ℘ ℔ 16 c

Rules.
Chapin's Boxwood ... dis 60&10 %
" Ivory ... dis 50&10 %
Hubbard & Curtiss Mfg. Co. ... new list net
Stanley Rule and Level Co.'s Ivory ... dis 30&10 %
" " " Boxwood ... dis 60&10 %
Standard Rule Co.'s Boxwood ... dis 60&10 %
" " " Ivory ... dis 50&10 %

Sad Irons.
... ℘ ℔ 4½c net
Sad Iron, Nickel Stand attached ... ℘ ℔ 9c

Sand Paper—dis 7½ @ 10 %
Beader & Adamson's (Flint) 00 to 1½ ... $4 25 ℘ ream
" " " 2, 2½ & 3 ... 4 75 "
Assorted ... 4 25 "
Star ... ℘ ream $3 25
Emery ... ℘ ream $6 50 @ 11 50
Cowdin Mfg. Co. ... dis 7½ @ 10 %
Diamond Flint, 00 to 1½ ... per ream $4 25
" " 2, 2½, 3 and assorted ... " 4 75
" Emery Paper ... per ream $6 50 to $11 50

Sash Locks.
Clark's ... dis 20 %
Ferguson's ... dis 20 @ 25 %
Norwich ... dis 15 %

Sash Weights.
Solid Eyes ... ℘ ℔ 2½c

Sausage Fillers.
Perry's (P. S. & W.) ... dis 10 %
No. ... 1 0
℘ doz ... $15 00 $21 00

Saw Rods ... dis 10 %

Saws.
Spear & Jackson's ... $4 50 to £ gold
John Spear ... $3 60 to £ gold
Am. Saw Co. ... new list
Perforated Cross Cuts, all kinds ... 68c ℘ foot
Inserted Tooth ... dis 10 %
All else ... dis 12½ %
Disston's Circular ... dis 20 %
" Mill ... dis 25 %
" Cross Cut ... dis 15 %
" other kinds ... dis 12½ %
Livingston's Framed Wood ... dis 5 %
H. W. Peace's Circulars ... dis 10 %
Other kinds ... dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular ... new list dis 10 %
E. M. Boynton's Lightning, dis 30&5 % for immediate cash
" " Others ... dis 15 %

Saw Sets.
Nash's ... dis 20 %
Bemis' ... dis 10 %
Aiken's Genuine ... dis 25 %
Hotchkiss' ... dis 10 %
Common Lever ... per doz $1 60 net

Scales.
Turnbull's ... dis 15 %
Brown's ... dis 25&5 %
Fairbanks' ... new list dis 15 @ 20 %
Howe's ... dis 15&5 %
Shattuck's Counter and Union ... dis 15 %
Chatillon's Grocers' ... dis 25 %
Eureka ... dis 25 %
Scale Beams ... dis 25 %
No. 1 300 to 1200 lbs ... 90c ℘ cwt
No. 2 " " ... 75c ℘ cwt

Screws.
American list of Jan. 1, 1874.
Flat Head Iron ... dis 52½ %
Round Head Iron ... dis 50 %
Flat Head Brass ... dis 52½ %
Round Head Brass ... dis 50 %
Round Head Silver Capped ... dis 25&10 %
Hand Rail ... dis 33⅓ %
Coach or Lag ... dis 30&10 %
Coach, Patent Gimlet Point ... dis 5 %
Bed ... list net
English—Nettlefold & Chamberlain's Flat Head Iron ... dis 52½&10 %
Machine—Flat Head, Iron ... dis 60 %
" " Brass ... dis 10 %
Round Head, Iron ... dis 55 %
" " Brass ... net
Bench—Iron, Wilson's ... dis 20 %
" —Wood ... dis 15 %
Hand ... dis 25&10 %
Jack—Bell Bottom ... dis 15 %

Scythes.
Blood's German Steel, Grass ... ℘ doz $9 00
" Cast " " ... ℘ doz 10 00
" Silver " " ... ℘ doz 11 00
" German " Grain ... ℘ doz 13 00
" Cast " " ... ℘ doz 14 00
" Red Rover ... 12 00
" Young America ... 9 50
" Silver Clipper ... 12 63
Scythe Snaths ... dis 20 %

Sieves.—Mann's Patent ... dis 15 %

Shears.
Cast Steel ... dis 60&10 %
Conn. Cutlery Co., new brand ... dis 60 %
Rowe's ... dis 50&10 %

Shovels and Spades.
Ames ... new list dis 12½ %
Rowland ... dis 20&5 %
Old Colony ... new list dis 10&5 %
N. B. Sherman ... old list dis 7½ %

Shovels and Tongs.
Iron Head ... list net
Brass Head ... dis 5 %
Polished Steel ... new list dis 15 %

Slates.
Square Frames, Round Cornered, by case ... dis 60&10 %
Less than a case ... dis 50 @ 55 %
Oval Frames, by case ... dis 40 @ 40&10 %
Less than a case ... dis 30 %

Spoons.
Iron ... new advanced list, dis 10 %
By the case ... dis 20 %
Britannia ... dis 40@40&10 %
Plated A 1 ... revised list dis 30&5 %
German Silver ... revised list dis 10&10 %
Tinned (P. S. & W.)—
Teas ... $1·50 ℘ gross, net
Tables ... 2·75 " net

Stocks and Dies.
... dis 15 %

Stove Polish.
Gem ... ℘ gross $5 00, dis 10 %
Joseph Dixon's ... ℘ gross, 6 00
National ... ℘ gross $4 75
Gold Medal ... ℘ gross $6 00, dis 15 %

Squares.
Steel ... dis 50 %; full cases, dis 50&10 %
Iron ... dis 50 %; full cases, dis 50&10 %
Nickel Plated ... add $2 50 @ $4 00 ℘ doz net
Try Squares and T Bevels ... dis 45&10 %
Star Try Squares and Bevels ... dis 30 %

Tacks.
Full Weight American Iron ... dis 40&7½ %
Half Weight American Iron ... dis 70&7½ %
Carpet ... dis 7½ %
Brads American Half Weight ... dis 50&7½ %

Finishing Nails	⅜	⅝	¾	1	1¼ in. and over	
℘ ℔	25c	20c	15c	14c	13c	dis 7½ %
Trunk and Clout	⅜	⅝	¾	1	1¼ in. and over	
℘ ℔	25c	20c	15c	14c	13c	dis 7½ %

Copper Tacks ... ℘ ℔ 50c—dis 7½ %
Iron Shoe Nails, ℘ ℔ 4-8 and longer, 10c; 3½-8, 10½c ... dis 7½ %
Double Pointed ... new list dis 33⅓ %

Tapes, Measuring.
American Flask and Cap Co. ... dis 20 %
Eddy's ... dis 20 %

Thermometers.
Tin Case ... dis 50 %

Toe Calks.
... ℘ ℔ 13c net

Tobacco Cutters.
Champion ... dis 20&10 %
Peck, Stow & Wilcox ... dis 10 %

Tinners' Tools and Machines.
P. S. & W. ... list net

Traps.
Newhouse ... dis 20 %
Hotchkiss ... dis 20&10 %
Peck, Stow & Wilcox ... dis 30 %
Blake's Patent ... dis 15 @ 20 %

Trowels.
Lothrop's Brick and Plastering ... dis 10 %
Disston's " " ... dis 12½ %
Brades' " " ... gold, net
Worrall's " " ... dis 15 %
Garden ... dis 20 %

Vises.
Trenton Vises, Solid Box.
30 to 160 lbs ... 16c
160 and over ... 19c
Peter Wright's ... ℘ ℔ 15½c. gold
Wilson's Solid Box ... dis 15 %
30 to 160 lbs ... 18c
160 and upward ... 22c
Wilson's Parallel ... dis 30 %
Backus & Union, Parallel ... dis 25 %
Buffalo, Parallel ... new list dis 20 %
Fisher & Norris' Double Screw Parallel ... dis 15 @ 15&5 %
Trenton Parallel ... dis 15 %
Bonney's Saw Filers ... dis 20 %

Wheel Barrows.
Pugsley & Chapman—Canal ... dis 10&5 %
Coal, Garden and Stone ... dis 20 %

Wheel Heads.
Brass Bushed ... per doz $3 25 net

Well Wheels.
Revised list ... dis 55&10 %

Wire.
Bright and Annealed ... Nos. 0 @ 18 dis 35 @ 40 %
" " ... " 19 @ 26 dis 45 @ 50 %
" " ... " 27 @ 36 dis 50 @ 55 %
Coppered ... " 0 @ 18 dis 25 @ 30 %
Galvanized, Nos. 9 to 12 ... dis 40 @ 45 %
Galvanized, Nos. 13 to 18 ... dis 45 @ 50 %
Tinned ... dis 20 @ 25 %
Cast Steel ... 5 @ 10 %
Tinned Broom Wire ... dis 25 @ 30 %
Galvanized Telegraph, Nos. 8 and 9 ... ℘ ℔ 10c @ 11c
" " " 10 and 11 ... ℘ ℔ 11c @ 12c
" " " 12 ... ℘ ℔ 11½c @ 12½c
Annealed Fence, Nos. 8 and 9 ... dis 35 @ 40 %
" Grape, " 10 to 14 ... dis 35 @ 40 %
Fence Staples ... ℘ ℔ 8½ @ 9 %
Stubs' Steel Wire ... $7 00 to ℔ gold

Wrenches.
American Adjustable ... dis 45 %
Baxter's Adjustable "S" ... dis 20 %
" Diagonal ... dis 20 %
Collins & Co.'s ... dis 40 %
Coes' Genuine ... dis 40 @ 40&5 %
" Pattern (Wrought) ... dis 50 %
" " (Malleable) ... dis 60&10 %
Lindsay's Patent ... dis 25 %
Taft's Pattern ... dis 70 %
Davis' Patent Duplex ... new list dis 25 %
Bemis & Call's Patent Combination ... dis 30&5 %

Wringers.
Universal—Extra ... ℘ doz $72 00 net
Novelty ... ℘ doz 72 00 net
Sherman ... ℘ doz 67 00 net
Reliance ... ℘ doz 67 00 net
Providence ... ℘ doz 72 00 net
Monitor ... ℘ doz 67 00 net

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE.

Basins.
Wash Basins, Handled, Plain Stamped ... dis 25 %
Inch ... 10 11 11½
Per doz ... $3·50 4·00 4·50
Wash Basins, Handled, Retinned ... dis 25 %
Inch ... 10 11 11½
Per doz ... $4·00 4·50 5·00
Wash Basins, with Feet, Plain Stamped ... dis 25 %
Inch ... 10 11 11½ 13½
Per doz ... $2·00 2·50 2·35 3·75
Wash Basins, with Feet, Retinned ... dis 25 %
Inch ... 10 11 11½ 13½
Per doz ... $3·00 3·50 4·00 5·00
Wash Basins, Stamped ... dis 25 %
Inch ... 10 10½ 11½
Per doz ... $1·70 2·10 2·50
Inch Shallow ... 10 11
Per doz ... $1·55 1·90
Wash Basins, Retinned ... dis 25 %
Inch ... 10 10½ 11½
Per doz ... $2·50 3·00 3·50
Inch Shallow ... 10 11
Per doz ... $2·00 2·60

Covers.
Bucket ... dis 10 %

	1 pt.	1 qt.	2	3	4	6	8	10	12 qt.
Per gross	$2·25	3·00	4·00	4·50	5·75	7·75	8·75	9·25	13·00

Coffee Pot ... dis 10 %

	3 pt.	2 qt.	3	4	6 qt.
Per gross	$1·25	1·50	1·75	2·25	3·50

Pot ... dis 10 %

Inch	7¼	7¾	8¼	8¾	9¼	9¾	10¼
Per gross	$5·50	6·00	6·75	7·25	8·00	8·50	10·25
Inch	10¾	11¼	11¾	12¼	13¼		
Per gross	$11·00	11·75	12·50	15·50	19·00		

Tea Kettle Breasts and Covers ... dis 10 %

Inch	5¾	6½	7¼	8	8¾	9	
Per gross	$6·00	6·50	8·00	9·00	9·75	10·50	
Inch	9¾	10	10½	11	11½	12½	13½
Per gross	$11·25	13·00	14·00	15·00	16·00	21·00	24·00

Dipper Bowls, Plain Stamped ... dis 25 %

Pints	½	¾	1	1½	Quarts	1	2	2½
Per doz.	·50	·60	·70	·90	Per doz	·90	1·25	1·50

Dipper Bowls, Retinned ... dis 25 %

Pints	½	¾	1	1½	Quarts	1	2	2½
Per doz.	·75	·95	1·00	1·15	Per doz	1·30	1·55	1·90

Pans.
Dish Pans, Tinned ... dis 25 %

Quarts	7	8	10	14	17	21	30
Per doz	8·50	9·50	11·00	13·00	16·00	19·00	30·00

Milk Pans, Plain Stamped ... dis 25 %

Quarts	½	1	1½	2	3	4	5	6	8	10
Per doz	$·85	1·05	1·20	1·45	1·65	2·40	2·90	3·15	4·40	5·00

Milk Pans, Retinned ... dis 25 %

Quarts	½	1	1½	2	3	4	5	6	8	10
Per doz	$1·15	1·40	1·60	1·90	2·15	3·00	3·40	3·80	5·20	6·00

Pie Plates ... dis 10 %

Inch	6	7	8	9	10	11
Per gross	$4·50	5·00	7·25	7·75	10·50	12·00

JAPANNED TIN WARE.

Cannisters, Common ... dis 10 %
Pound ... ½ 1 2 3
Per doz ... $1·10 1·60 2·50 3·25
Cannisters, Hinged ... dis 10 %
Pound ... 1 2 3 4 6
Per doz ... $1·75 2·75 3·40 3·75 4·50
Candlesticks, Japanned ... dis 10 %
No ... 1 2
Per gross ... $6·00 7·00
Cake Boxes, Round ... per nest, $3·25, dis 10 %
" Square ... per nest, 4·25, dis 10 %
Chamber Pails, Japanned (Smith, Burns & Co.) ... dis 10 %

Nos	2	3	4	5
Green, per doz	$8·00	9·00	10·50	12·50
Oak "	$9·50	10·50	12·00	13·50

Dust Pans, Corrugated ... per gross, $22·00, dis 10 %
Box Graters ... per gross, $4·00, dis 10 %
Molasses Cups ... dis 10 %
Pint ... ½ 1 2
Per doz ... $1·25 ·50 2·75
Pepper Boxes Japanned ... dis 10 %
Per gross ... Small, $3·00; Large, $4·00
Toy Banks, House ... dis 10 %
No ... 1 2
Per gross ... $7·00 5·50
Toy Banks Gothic ... dis 10 %
No ... 1
Per gross ... $5·50
Toy Cups, Straight ... dis 10 %
No ... 1 2 3
Per gross ... $4·00 3·50 5·50
Toy Cups, Flaring, nests of (3) ... per gross, $2·50, dis 10 %
Toy Pails, Covered ... dis 10 %
No ... 1
Per gross ... $4·50
Toy Rattles ... per gross, $2·25, dis 10 %
Trunks, Wire Handled ... per nest (5) $1·50, dis 10 %
Spittoons, Tin ... per gross, No. 2, $30, No. 3, $27, dis 10 %

PLANISHED TIN WARE.

Planished Coffee Pots, Round ... dis 25 @ 30 %

Each	·60	·75	·85	·95	1·15	1·25	1·30	1·40
Pints	1	2	3	4	5	6	7	8

Planished Tea Pots, Round ... dis 25 @ 30 %

Each	·70	·80	·95	1·05	1·25
Pints	2	3	4	5	6

Planished Tea Pots, Oval ... dis 25 @ 30 %

Each	·70	·80	·90	1·05	1·15	1·40	1·75
Pints	1	2	3	4	5	6	8

Tea Pot Handles—P. S. & W. ... dis 20 %
Stow's Patent Hollow Tea Pot Handles.
No. 1, Small 4½ inches ... per gross, $11·50
No. 2, Medium, 5¾ " ... " 12·50
No. 3, Large, 6½ " ... " 13·50
No. 4, Ex. Large, 7½ in., for Wash Pitchers, &c. ... " 18·00
Stow's Patent. New Pattern.
No. 25, Small, 4½ inches ... per gross, $11·50
No. 35, Medium, 5¾ " ... " 12·00
No. 45, Large, 6½ " ... " 13·00
Solid Iron, Tin Tipped.
No. 10, Small, 4½ inches ... per gross, $9·00
No. 15, Medium, 5½ " ... " 9·50
No. 20, Large, 6½ " ... " 10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.
No. 12, Bronzed and Tin-Tipped ... per gross, $13·50
Saucepan Handles. Of Best Malleable Iron.
P. S. & W. ... dis 30 %
Japanned.
No. 1, 5½ inches long ... per gross, $3·50
No. 2, 6 " ... " 3·75
No. 3, 6½ " ... " 4·00
No. 4, 7¼ " ... " 4·25
No. 5, 8 " ... " 4·50
No. 6, 9 " ... " 4·75
Tinned.
No. 1, 5½ inches long ... per gross, $4·25
No. 2, 6 " ... " 4·50
No. 3, 6½ " ... " 4·75
No. 4, 7¼ " ... " 5·25
No. 5, 8 " ... " 5·50
No. 6, 9 " ... " 5·75
Japanned ... per lb., ·16
Tinned ... " ·20
Iron Kettle Ears (P., S. & W.) ... dis 45 %
Half gross pairs in a package.
Tinned.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	88c	$1·00	1·50	1·75	2·10	2·75	3·75	4·50

Black.

Nos	1	2	3	4	5	6	7	8
Per gross pairs	75c	88c	$1·35	1·50	1·75	2·25	2·75	4·00

Tinned Tea Kettle.

Nos	4	5	6
Per gross pairs	$1·75	2·10	2·75

METALS.

IRON.—Duty: Bars, 1 to 1½ cents per lb.; Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—American.
Foundry No. 1 ... ℘ ton, $35 00 @ 36 00
Foundry No. 2 ... " 33 00 @ 34 00
Gray Forge ... " 29 00 @ 31 00
White and Mottled ... "
SCOTCH.
Coltness ... 40 00 @ 41 00
Glengarnock ... " 39 00 @ 40 00
Eglinton ... " 37 00 @ 38 00

Bar Iron.
Am. Refined, at mill ... ℘ ℔ 3c @ 3 3c

Rails.
Welsh, gold ... ℘ ton,
American, at works, currency ... " 60 00 @ 60 00
Old Rails, T, currency ... " 40 00 @ 41 00

Scrap.
Wrought Scrap, from yard ... " 41 00 @ 42 00

Bar Iron from Store.
Common Iron.
¼ to 2 in. round and square ... ℘ ton, $ 70 00
⅜x9-16 in " " ... " 75 00
¼ in. " " ... " 77 50
2¼ to 3 in. " ... " 75 00
1 to 6 in. wide x ⅜ and 1 in. thick ... " 70 00
1¼ to 6 in wide x ¼ & 5-16 in. thick ... " 75 00
1 and 1⅛ in. x ¼ and 5-16 ... " 82 50
Swedish Iron
1¼x⅝ and ⅜ ... " 170 00
1½x⅜ to ⅝, and ¾ square ... " 165 00
1¾ to 5x⅜ to ¾ and ⅞ to 2-in. square ... " 160 00
6 to 9x⅜ and ⅝ ... " 170 00
Refined Iron.
¼ to 2 in. round and square ... " 72 50
1 to 6 in. wide x ⅜ to 1 thick ... " 72 50
1¼ to 6 in wide x ¼ and 5-16 thick ... " 77 50
1 and 1⅛ x ¼ and 5-16 ... " 77 50

Large Rounds.		
2½ to 2⅝, round and square	"	80 00
3, 3¼ and 3½ in	"	85 00
3¾ and 4 in	"	77 50
Rods—⅜ and 11-16, round and square	"	80 00
½ and 9-16, " "	"	85 00
7-16, " "	"	90 00
⅝, " "	"	95 00
5-16, " "	"	100 00
¾, " "	"	127 50
3-16, " "	"	127 50
Band Iron.		
1 to 6 in. x 3-16 to No. 12	"	92 50
Horse Shoe Iron.		
⅜ and ½ x ⅜, to ⅛	"	107 50
1 x ⅜, to ⅛	"	
Ovals, Half Ovals and Half Rounds.		
⅜ to 1½	₩ ton,	$ 97 50
⅝ and 11-16	"	102 50
⅝ and 9-16	"	107 50
7-16	"	
⅜	"	
Nail Rods		
Best Norway	₩ lb	8½ @ 9c
Norway Shapes		
¼ to 2 in. x ⅛ to ⅜	₩ lb	8½c
¼ to ⅝ square	"	
Norway Bar		
⅜ to 2 in. square		
Spring Steel		
1 to 4 in. wide	"	7¾c
Tire Steel		
⅜ to 1½ x ¼ and 5-16	"	8½c
⅜ & 1 x 3-16	"	9½c
⅜ & 1 x ⅛	"	
Toe Calk Steel		
½ to ¾ x ⅜ to ½	"	7¾c
Plow Steel		
6 to 16 wide	"	8¾c
Sleigh Shoe Steel		
⅜ to 1½ x ⅜ to ⅝	"	6¾c
Hoops, ⅜ x No. 22	₩ ton	$155 00
" ⅜ x No. 20	"	130 00
" ⅜ x No. 19	"	125 00
" 1 and 1¼ x No. 18	"	115 00
" 1¼ to 2 and 1x1¼ x No. 13 and 14	"	105 00

Sheet Iron.

		Common English.	R. G. American.	R. G. English.
Nos. 10 to 20	₩ ₰	4½ @ 4¾c	5½c	6c
21 to 24	"	5 @ 5¼c	6c	6¼c
25 to 26	"	5¼c	6¼c	6¾c
27	"	5¾c	6¾c	7c
28	"	6c	7c	7¼c
30	"	7¼c		
Galvanized, 10 to 20, prime	₩ ₰			10½c
" 21 to 24	"			11½c
" 25 to 26	"			12½c
" 27	"			13½c
Patent Polished	"			14½c
Russia, Nos. 8 to 11	₩ ₰			19c
" Nos. 12 to 16	"			19c
" Stained, No. 1	"			17½c
Belgian	"			

Brass.

ROLLED AND IN SHEETS.

(Brown & Sharp's Gauge.*)

For the purchase of 100 pounds and over at one time

HIGH BRASS.

All Nos. to No. 28, and widths 14 in. and under 34c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in. inclusive 37c
Over 20 in. to 30 in. inclusive 40c
½c ₩ ₰ advance on each No. above No. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass at 53c
Sheets 24x48 in., and all sheets cut to particular sizes and lengths 40c
Platers' Rules 44c
Sheets wider than 20 in. and under 40 in 44c
" 40 in. and over 46c
Circular sheets, in diam. from 4 in. to 14 inclusive 44c
" " " over 14 in. to 20 " 47c
" " " " 20 in. to 30 " 50c
" " " " 30 in. to 40 " 53c
" " " " 40 in 56c
Brass Rods above No. 0, and under 1 in 43c
" " 1 in. and over 47c

LOW BRASS.

4c ₩ ₰ more than High Brass.
Gilding Metals, 7c ₩ ₰ more than High Brass.
Platers' or Gold Metal { In Bars 46c / Sawed 49c

FOR SLITTING: Metal in Width.

2 in. to ¼ in., to No. 30, inclusive, 1c ₩ ₰ advance.
2 in. to 1 in., thinner than No. 30, 2c ₩ ₰ advance.
2 in. to ⅜ in., " " 30, 3c " "
⅜ in. and less to No. 30, 2c ₩ ₰ advance.
⅜ in. and less thinner than No. 30, 5c ₩ ₰ advance.
10 ⅌ discount.

SCRAP—NEW METAL.

High Brass Scrap, 17 cents, net.
Low " 19 " "
Gilding, 21 cents, net.
Turnings, Fillings and Chips, half the price of Scrap net.

BRASS AND COPPER WIRE.

(Stub's Wire Gauge).

	High Brass.	Low Brass.	Gild'g and Cop'r
Nos. 0 to 30	37	41	47
Nos. 21, 22, 23	38	42	48
Nos. 24 and 25	39	43	49

Brass Wire straightened and cut, 4 cents advance
10 ⅌ discount

FINE WIRE—NET PRICES.

	High Brass.	Low Brass.	Gild'g and Cop'r
No. 26	0·41	0·45	0·51
No. 27	0·44	0·48	0·54
No. 28	0·46	0·50	0·56
No. 29	0·43	0·52	0·58
No. 30	0·50	0·54	0·62
No. 31	0·52	0·56	0·66
No. 32	0·56	0·60	0·71
No. 33	0·60	0·64	0·81
No. 34	0·64	0·68	0·91
No. 35	0·69	0·73	1·03
No. 36	0·78	0·82	1·15
No. 37	0·98	0·58	1·28
No. 38	1·28	1·28	1·28

Ten cents per pound extra for Spooling.

TUBING.

(Brown & Sharpe's Gauge.)

	₩ ₰
Plain to No. 30, inclusive	$0·52
Nos. 21, 22, 23, 2c. advance on List for each No.	
Nos. 24, 25, 26, 4c. " " "	
Above No. 26 special rates.	
Plain Tube, 1-4 inch	68
" 5-16 "	1 53
" 1-8 "	1 78

All Mandrel-Drawn Tubes 5c. advance on List.
Fancy Tubing 4c. advance on List above Plain.
English, Scotch, and Extra Patterns Fancy Tubing to No. 30 61
Tubing sawed or cut 2 to 4 ft. long, 2c. advance on List.
Add to two cents a half-cent for each additional cutting under two feet. 10 ⅌ discount.
BRASS DOOR RAIL—48 cents per lb.—10 ⅌ dis.

BELT AND HOSE COPPER RIVETS AND BUES.

Price per ₰	49	50	52	54	56	58	60	64	68c
Nos.	7	8	9	10	11	12	13	14	15

Braziers Rivets, 43 cents per pound discount 10 ⅌.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire
4 per cent. 12 inch. to No. 36	0·75	0·90
6 " " "	0·85	1·00
10 " " "	1·05	1·25
15 " " "	1·30	1·55
18 " " "	1·45	1·75
21 " " "	1·55	

Discount 10 ⅌.
German Silver Sheet over 12 inches wide and weighing more than 10 lbs. 42·10 ₩ ₰ net
Advance two cents for each additional inch in width above 12 inches, and two cents per pound on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers' at 50 cents per pound additional.
German Silver Scrap, one-third less than net price of 12 inch Market Metal; German Silver Turnings, Fillings and Chips, half the price of Scrap.
* Brown & Sharp's Gauge is about two numbers finer than Stubs' Wire Gauge.

COPPER—DUTY: Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ ₰; Manufactured (including all articles of which copper is a component of chief value) 45 ⅌ ad valorem. All subject to a reduction of 10 per cent.

American Ingot	₩ ₰	26 @ 26½c
English "	"	

SHEATHING, BRAZIERS COPPER, BOLTS, &c.

Braziers Copper, ordinary sizes, over 16 oz., per square foot	35c	₩ ₰
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot	38c.	"
Braziers Copper, 12 oz. per square foot and lighter	41c.	"
Circles less than 24 inch in diameter	38c.	₩ ₰
Circles, 6 4 inch diameter and over	41c.	"
Segment and Pattern Sheets	38c.	"
Locomotive Fire Box Sheets	35c.	"
Sheathing Copper, over 12 oz. per sq. ft	35c.	"
" 12 oz. ₩ sq. ft. and lighter	41c.	"
Bolt Copper	35c.	"

No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

TINNING.

14x48, by the case	8c.	₩ sheet
14x48, less than case	10c.	"
Boiler Sizes, 7 and 8 inch	12c.	"
" 9 inch	15c.	"
Other sizes not larger than 30x60	2½c.	₩ sq.
Larger than 30x60	5c.	"
Copper Bottoms	34 @ 36c.	₩ ₰ net

O'NEILL'S PATENT PLANISHED COPPER.

14x48.

14 and 16 oz. and heavier 39c. By the case, 38c. ₩ ₰
12 oz. and lighter 42c. " " 41c. "

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier 41c. By the case, 40c. ₩ ₰
(And all sizes not over 20 inches wide.)

30x60

14 and 16 oz. and heavier 43c. ₩ ₰
12 oz. 46c. "

LEAD—DUTY: Pig, $4 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.

Spanish	6¾	@ 6¾c gold
German Refined	6¾	@ 6¾c gold
English		@ 7¼c gold
Bar	dis 10 ⅌	9½c.
Pipe	dis 10 ⅌	9c.
Tin Lined Pipe	dis 10 ⅌	10½c.
Sheet	dis 10 ⅌	9c.
Shot	dis 10 ⅌. Drop, 9c.;	Buck, 9½c.

Solder No. 1, 16c. @ 19c.; No. 2, 17c. @ 17½c

STEEL—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3½ cents per lb. and 10 ⅌ ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.

Tool	16c
Spring	12½c
Homogeneous	12½c
Tire	12½ @ 13½c
Machinery (round and square)	11½ @ 12c
File	12½c
Sheet	14 @ 16c
Saw Plate, mill and mulay	14 @ 16½c
Saw Plate, gang and X cut	13 @ 14c
" circular as to size	15 @ 30c

Chrome Steel.

Tool	₩ ₰ 20 @ 21c
Tool, extra fine	" 40 @ 75c
Spring	₩ ₰ 12c and upward
Machinery	₩ ₰ 14c.
Hammer	" 15c,
Gun or Homogeneous	" 16c

English Steel,—payable in gold, dis 5 ⅌ cash.

" Best Cast	₩ ₰	18c
" Extra Cast	"	19c
" Round Machinery, Cast	"	11½c
" Swaged, Cast	"	18c
" Best Double Shear	"	18c
" Blister, 1st quality	"	13½c
" " 2d quality	"	11½c
" " 3d quality	"	10½c
German Steel, Best	"	11½c
do 2d quality	"	10½c
Sheet Cast Steel, 1st quality	"	18c
" " 2d quality	"	16c
" " 3d quality	"	14c
File Steel, Flat and ½ Round	"	12½c
" Square and Round	"	13c
" Mill	"	13½c
" Taper to 4 inch	"	15c
" Taper 3 and 3¼ inch	"	18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.

Silesian, cash	7¼ @ 7¾c., gold
American "	8 @ 11c. currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per ₰; Manufactures of, not enumerated, 35 per cent. ad val.—all subject to a reduction of 10 per cent. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.

Banca	₩ ₰ 28½ @ 29c. gold
Straits	₩ ₰ 21c gold
English	₩ ₰ 24½c. gold

CHARCOAL TIN PLATE.

I C 10x14, Prime Charcoal	12·00
12x12, "	12·50
14x20, "	14·75
I X 10x14, "	14·25
12x12, "	14·75
14x20, "	15·25
D C 12½x17 "	11·50
D X 12½x17 "	13·75
For each additional X add	2·25

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$11·25 @ 11·50	10·25 @ 10·50	9·25 @ 9·75
I C 12x12	11·75	11·00	
I C 14x20	12·00	11·00	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$10·75 @ 11·00	9·75 @ 10·50	7·00 @ 9·50
I X 14x20	13·50		
I C 20x28	23·50	21·25 @ 23·00	18·75 @ 21·25
I X 20x28	28·25	27·25	
I C 20x20 ft.	24·75		

ZINC—DUTY: 1½c Pig or Block, $1 50 per 100 lbs. Sheet, 2½c. ₩ ₰. All subject to a reduction of 10 per cent.

Sheet	cask 9½c
"	open 9½c

Paper Stock, Old Metals, &c.

(*Dealers' Selling Prices.*)

Canvas linen	6	@
" cotton, No. 1		@ 6
" " No. 2		@ 3½
White linen rags, No. 1		@ 7½
" " No. 2		@ 5½
Colored	2½	@
Mixed woolens		@ 3
Soft woolens		@ 6½
Gunny bagging	1¾	@ 2
Jute Butts	2¾	@ 2¾
Kentucky bagging	5¼	@ 5½
Book stock	4	@ 4½
Waste paper and scraps	1½	@ 3
Rope cuttings	1½	@ 3
Kentucky Bale rope	4	@ 4¼
Oakum junk, No. 1	5½	@ 5¾
" No. 2	3½	@ 4
Grass rope	3¾	@ 4
Tarred Shaking	1¾	@ 1½
White Collar Cuttings, all paper	5	@ ..
" " muslin lined	6	@ ..
" Envelope "	7	@ ..
Hard White Shavings, No. 1	6½	@ ..
Soft " " No. 1	6	@ ..
White Shavings, No. 2	5½	@ 6
Mixed Shavings, part white	4	@ 4¼
Imperfections, No. 2, best folded sheets	5	@ ..
" " 1, Heavy Stock	4¼	@ 5
Book Stock, Mixed	3½	@ 4
" " No. 2, light	2¾	@ 3
Prints	1½	@ 2
Pure Manilas	2½	@ 2¾
Bogus Manilas and Hardwares	1½	@ 1⅞
Commons	1	@ ..
Binders' Board Cuttings	1½	@ 2
Straw Board Cuttings	1¼	@ 1⅜

Old Metal.

Copper	23	@ 23
Yellow metal	16	@ 17
Brass	16	@ 17
Heavy Composition	19	@ 20
Old lead, solid		6½
Tea lead		5½
Wrought iron	1½	@ 1⅝
Sheet iron	0¾	@
Cast iron	1	@ 1¼
Machinery iron	1¼	@ 1⅜
Zinc		5½
Pewter, No. 1	23	@ 24
" No. 2	10	@ 12
Spelter		7

Paints, Oils, etc.

Paints.

Black, lamp—Coach Painters	₩ ₰	30c
" " Ordinary		16c
" Ivory Drop, fair		15c
" " best		20c
Black Paint, in oil	kegs, 8c.; asst'd cans, 11	c
Blue, Prussian, fair to best		50 @ 75c
" " " in oil		35 @ 45c
" Chinese, dry		32c
" Ultamarine		25 @ 30c
Brown, Spanish		1½c
" Van Dyke		9c
Carmine, 40		$12 00
Green, Chrome		15 @ 23c
" " in oil		18 @ 25c
" Paris	good, 30c; best, 40c	
" " in oil	30c; " 45c	
Mineral Paints		1¼ @ 4c
Orange Mineral		14½c
Red Lead, American		9½c
" " English		10½c
" Venetian (N. C.) dry		2¾c
" " in oil	asst'd cans, 11c; kegs, 8½c	
" Indian, dry		10c
Rose Pink		18c
Sienna, American, Raw		4c
" Burnt		4½c
" " in oil		16 @ 26c
" Raw "		15 @ 25c
Umber, Burnt		4 @ 8c
" " in oil		16 @ 21c
" Raw		3½ @ 7½c
" in oil		16 @ 22c
Vermillion, Chinese		$1 62
" English		1 75
" Trieste		1 52
" American, Common		28c
White Lead, American, pure dry		10½c
" " " in oil		11½c
White, Paris, English, prime	in bbls.	2½ @ 2¾c
Yellow Ochre French		2½ @ 2¾c
" in oil	asst'd cans, 11c; kegs, 8½c	
Vermont	in casks	1½c
Chrome		17 @ 27c
" in oil		19 @ 28c
Zinc White, American No. 1 dry		9c
" 1, in oil		11c
" French (Paris)		11 c
" " in oil		12

Oils.

Linseed Raw	₩ gal. casks, 97c.	bbls. 98c.
" Boiled	" $1·02	" $1·03
Whale, Crude		"
" Bleached Winter		"
Sperm, Crude		" 1·50
" Winter unbleached		" 1.70
" Bleached		" 1·75
Seal, Extra Refined		"
Lard, Pure Winter		" 82c
" Spring		"
Cotton Seed, Crude		" 42½c
" Southern Yellow	46½c @	47½c
" White		"
Neatsfoot, Winter	70c @	$1·10
Natural Lubricating	38c @	40c

Sundries.

Asphaltum		9c
Benzine	₩ gal.	16c
Chalk		1½c
" Block		
Dryer, Patent, Am'n	asst'd cans, 10½c.; kegs,	9c
" " English	" 11c.; "	9c
Flocks		
Frostings		50c
Glue, White		33 @ 47c
" Sheet		30c
Glaziers' Points, Zinc		9c
Gum, Copal		55c
" Damar		35c
" Shellac, English		60c
" " dark		55c
Litharge		10c
Pumice Stone, selected Lumps		4 @ 6c
" powdered		4c
Putty in bladders		3½c
" in bulk		3c
Rotton Stone, soft, English		8c
Spirits Turpentine		48c
Whiting, Spanish		1c

Glass.

French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9	$8·00	$7·00	$6·75	$6·00
8 x 10 to 10 x 14	8·50	8·00	7·25	6·50
10 x 15 to 12 x 16	9·00	8·50	8·00	6·75
13 x 16 to 16 x 20	9·50	9·00	8·50	7·75
15 x 22 to 15 x 30	11·75	10·50	10·00	8·00
16 x 30 to 22 x 30	14·25	12·25	11·00	9·50
15 x 38 to 22 x 36	15·00	13·50	12·00	
24 x 36 to 24 x 40	15·75	14·25	12·50	
28 x 38 to 28 x 42	16·25	14·75	13·25	
28 x 44 to 28 x 50	17·25	15·75	14·25	
30 x 50 to 30 x 54	20·50	17·00	15·50	
32 x 54 to 34 x 56	21·50	19·25	17·50	
34 x 58 to 34 x 60	23·00	21·50	20·25	
36 x 60 to 40 x 60	26·50	24·25	23·00	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 7 x 9	$13·00	$12·00	$11·50	$10·00
8 x 10 to 10 x 14	14·00	12·75	12·00	10·75
10 x 15 to 12 x 16	15·00	14·00	13·25	11·25
13 x 16 to 16 x 20	16·00	15·00	14·00	12·50
15 x 22 to 15 x 30	20·00	17·50	16·50	13·25
16 x 30 to 22 x 30	22·00	19·25	17·75	15·00
15 x 38 to 22 x 36	23·75	20·50	19·25	
24 x 36 to 24 x 40	24·75	22·50	20·00	
28 x 38 to 28 x 42	26·00	23·50	21·00	
28 x 44 to 28 x 50	27·50	25·50	22·50	
30 x 50 to 30 x 54	31·00	26·50	24·00	
32 x 54 to 34 x 56	32·50	29·00	26·50	
34 x 58 to 34 x 60	34·50	33·00	31·00	
36 x 60 to 40 x 60	39·50	36·50	35·00	

Sizes above—$12·00 per box extra for every 5 inches. Discount to the trade, 50&10 to 50, 10&5 per cent.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket.

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CHARGES TO IRON WORKS.

For determining the per cent. of pure Iron in an ordinary Ore	$4 00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do	12 50
For each additional constituent of usual occurrence	1 50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur and Phosphorus in Iron or Steel	12
For each additional constituent of usual occurrence	4 0
For the per cent. of Carbonate of Lime, and Insoluble Silicious Matter in a Limestone	10 00
For each additional constituent	2 00
For the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12 50
or determining the constituents of a Clay, Slag, Coke, or of an Ash of Coal the charges will correspond with those for the constituents of an ore.	
For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.	
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Of various sizes for **ENGINES and PUMPS,** manufactured by JAMES GLANDING & CO., No. 115 Queen St., Philadelphia. What the proprietors claim for the Eagle Packing: 1. Its general adaptation to all purposes for which packing is used 2. Its durability. It will outlast any other article in use. 3. Its cheapness. It can be furnished to the consumer at a lower rate than any other packing.

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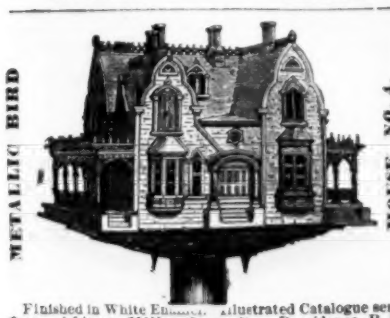

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This Wrench can be furnished with Briggs Pat. Nut or Sleeve.
PATENT COMBINATION WRENCH.
These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, Case-Hardened throughout. And not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench. Thus making a Combination which has no equal.
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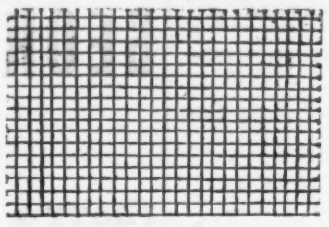
Shutter, Picture and Drawer Knobs.
Plate and Drop Escutcheons.
Picture Nails and Curtain Pins.
Bright Wire Goods.



Wire Cloth for Screens.
Furniture Nails.
Bright Halter and Coil Chains.
French Wire Nails.
Wrought Iron & Brass Butts.

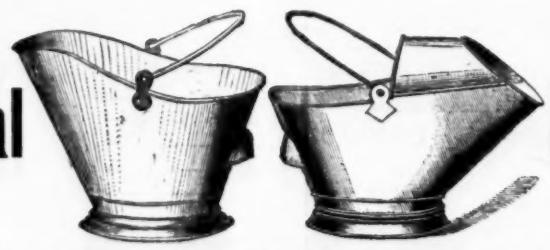
To buyers of Wire Cloth we give the assurance that our imported Screen Cloth is of best quality and finish—it excels in beauty and durability of color. We keep plain, green, gray, black, fancy patterns and landscape in stock, and all orders for ordinary widths from 24 to 48 inches will be promptly executed. Prices guaranteed satisfactory.

L. COES & CO.,
Manufacturers of
L. COES'
Genuine Improved
PATENT
SCREW
WRENCHES,
Worcester, Mass.

Our Mr. L. Coes, formerly senior member of the firm of L. & A. G. Coes, established in 1839, is the Original Inventor of the Screw Wrench, and has, by making the bar *wider*, where the strain comes most severe, and screwing a nut up firmly against four *square* shoulders inside the ferrule, thereby *effectually* preventing the ferrule from being thrust back into the handle or getting loose, and making a larger screw than in the old wrench, fully succeeded in making a 12 inch wrench stronger than a 15 inch made in the usual manner. All sizes are made in this way, and are undoubtedly the strongest and best finished Screw Wrenches in the market.

There are *Imitations* of our goods offered for sale, that, without question, infringe on our Patents.

We hold Patents bearing date Nov. 10th, 1863 (re-issued June 1st, 1869), June 26th 1866, March 23d. 1869 (re-issued April 12th, 1870, and May 14th, 1872), which fully cover all our improvements. One of the above cuts represents a sectional view, showing the nut under the ferrule, and the strengthened bar, that part being covered by the jaw, as seen in the cut of wrench complete. None genuine unless stamped
"L. COES & CO"
Warehouse, 97 Chambers and 81 Reade Streets, New York.
HORACE DURRIE & CO., Agent,
NEW ENGLAND AGENTS.
HOGAN, CLARKE & SLEEPER,
105 Broad St., Boston.

Coal  **Hods.**
STAMPED CORRUGATED RIVETED BOTTOM IN SIX STYLES.
SMITH, BURNS & CO.,
Manufacturers of
Galvanized and Japanned Sheet Iron Goods and Tin Ware, Fry Pans, Broilers, Ash Cans Garbage Buckets, Chamber Pails, Tea Kettles, Wash Boilers, Water Pails, Well Buckets, Toilet Ware, &c., &c. Exclusive manufacturers of the Patent Combined Chamber and Commode Pail. Stamped and Planished Ware.
Warehouse, 46 Cliff Street, between Beekman and Fulton Streets, NEW YORK.

JOHN WILSON'S CELEBRATED
BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.
THE TRADE MARK, IN ADDITION TO THE NAME,
IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY
JOHN WILSON.
CORPORATE TRADE MARK. FOUR PEPPERCORNS AND A DIAMOND.
GRANTED A.D. 1766, BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT.
BUYERS ARE SPECIALLY CAUTIONED AGAINST IMITATIONS OF THE MARK, AND THE SUBSTITUTION OF COUNTERFEITS BEARING THE NAME, "WILSON," ONLY.
Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

BEAM & MURRAY,
IMPORTERS OF
Anvils, Chains, Pocket Cutlery
Guns, Files,
BIRMINGHAM, SHEFFIELD & GERMAN HARDWARE,
Wostenholm's IXL Pocket Knives & Razors, Butcher's Files, Tools, &c
No. 54 Cliff Street, NEW YORK.

White Lead, &c.

John T. Lewis & Bros.,
No. 231 South Front St.,
PHILADELPHIA.
JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.
TRADE MARK.
MANUFACTURERS OF
PURE WHITE LEAD, RED LEAD, Litharge, Orange Mineral, Linseed Oil
AND PAINTERS' COLORS.

ATLANTIC WHITE LEAD CO. ROBERT COLGATE & PURE WARRANTED
TRADE MARK.
The Atlantic White Lead and Linseed Oil Company,
MANUFACTURERS OF
White Lead (Atlantic), Red Lead Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York.

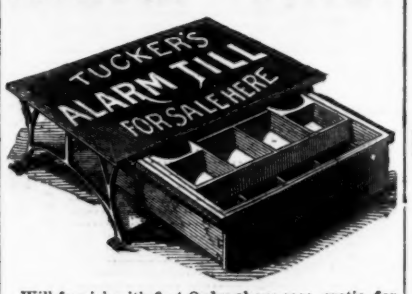
Established 1782.
WETHERILL & BRO.,
Manufacturers of
White Lead, Red Lead, Litharge & Orange Mineral.
OFFICES, { 31st. ST. BELOW CHESTNUT, No. 41 NORTH FRONT STREET, } PHILADELPHIA.

Brooklyn White Lead Co.

TRADE MARK.
White Lead, Red Lead and Litharge.
89 Malden Lane, NEW YORK.
FISHER HOWE, Treas.

JOHN JEWETT & SONS
Manufacturers of the well known Brand of
WHITE LEAD.
JEWETT & SONS' PERFECTLY PURE WHITE LEAD.
TRADE MARK.
Also Manufacturers of
LINSEED OIL
AND FLOOR OIL CLOTHS,
182 Front Street NEW YORK

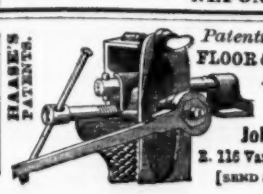
TUCKER'S
Alarm Tills.



Will furnish with first Order above case, gratis, for Sample Room. Send for price list to the Trade.
TUCKER & DORSEY, Manufacturers
Indianapolis, Ind.

Putnam's Government Standard
FORGED
HORSE SHOE NAILS.
Manufactured from the best of **NORWAY** Iron, and warranted to give entire satisfaction.
S. S. PUTNAM & CO.,
NEPONSET, MASS.

James S. Patterson,
Designer & Engraver on Wood.
21 Spruce Street, NEW YORK.



Patents. Hose Shield,
FLOOR & DOOR CLAMP,
And Eight Sizes
Ratchets.
John A. Haase.
R. 116 Vanhorn St. Phila. Pa.
[SEND FOR CIRCULARS.]

Hardware.

ESTABLISHED 1836.

ALFRED FIELD & CO.,

Foreign Hardware Commission Merchants

IMPORTERS AND EXPORTERS.

Offices and Warehouses:

Birmingham, Sheffield and Liverpool, England; New York, Philadelphia, Cincinnati and New Orleans, U. S.; Montreal, Canada.

In addition to our **Commission business,** and to meet the wants of the **Wholesale Trade only,** we are carrying in stock at **47 John and 5 Dutch Sts., N. Y., and 75 Gravier St., New Orleans,** leading goods in our line, such as,

Anvils, Chains, Vises, John Wilson's Goods, Chesterman's and other **Tapes, Brades London Trowels, Grass Hooks, Guns,** Padlocks, Curry Combs, **Pocket and Table Cutlery, Screws,** Galvanized Twisted Clothes Lines, Eley's Caps, Wads and Cartridge Cases **and a large line of Miscellaneous Goods.**

We are Sole Agents for Lawrence's new Patent Curry Combs, to which we call attention of the trade.

HILGER & SONS,

87 Chambers and 69 Reade Streets, NEW YORK.

MANUFACTURERS AND IMPORTERS OF

German Hardware, Cutlery, Scissors, Coffin Lace, Sheep Shears, Ball Braces, Bright Halter and Coil Chains, &c.

Also, Birmingham and Sheffield Hardware and Chains, Butcher's Files, Edge Tools & Razors, Wostenholm's Razors & Farriers' Knives, John Wilson's Butche Knives and Steels, Stub's Tapers, Chesterman's Metallic Tapes, Isaac Greave's Hedge Shears, James Bees & Parkin's Spoke Shaves, Turn Screws and Braces, Pad Locks, Goulcher's Gun Locks, Brades Trowels, &c.

HERMANN BOKER & CO.,

OFFICES AND WAREHOUSES:

NEW YORK, 101 and 103 Duane and 91 and 93 Thomas Streets.
REMSCHEID and SOLINGEN (Prussia.) H. Boker & Co.
SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. Arthur Lee.
LIEGE (Belgium), Represented by Mr. Louis Muller.

Manufacturers and Importers of **Cutlery, Guns, Hardware** and **Railroad Material.**
Proprietors of **TRENTON VISE AND TOOL WORKS, Trenton, N. J.**—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.
Proprietors of the **MANHATTAN CUTLERY CO.,** "O. K." Razors.
Sole Agents for **LAMSON & GOODNOW MFG. CO., Shelburne Falls, Mass.**—Table Cutlery and Butcher Knives.
W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.
Geo. Wostenholm & Son's Knives, Scissors and Razors, the largest stock in the U. S.
John Wilson's Butcher and Shoe Knives.
Peter Wright's and Armitage Anvils.

We always have on hand a full assortment of

German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.

SPEAR & JACKSON,

Sheffield, England,

MANUFACTURERS OF

Saws, Files, Edge Tools and Steel.

JOHN L. FISHER. Agent,
116 Duane Street, NEW YORK.

ROY & COMPANY,

West Troy, N. Y.,

Manufacturers of

Wrought Iron Butts, Strap and T Hinges,
PLATE AND HOOK HINGES,
Cold Pressed Nuts and Washers, Felloe Clips, &c.

JOHN L. FISHER, Agent, 116 Duane Street, New York.

STANLEY WORKS,

MANUFACTURERS OF

Wrought Butts, Strap and T Hinges.
Bronzed Butts and Bolts.
Wrought Barrel, Square and Shutter Bolts.
Wrought Chest Handles, Washers, Flush Bolts, &c.

79 CHAMBERS ST., NEW YORK.
Factory at New Britain, CONNECTICUT.

CROOKE & CO.,

MANUFACTURERS OF

WROUGHT IRON BUTTS,

All our goods are manufactured from patent faced iron plates; they have a smooth face and bright finish.

163 & 165 Mulberry Street, New York.

ESTABLISHED IN 1849.

JOHN C. JEWETT & SONS, Buffalo, N. Y.

MANUFACTURERS OF

ALSO JAPANNED AND BRIGHT BRASS

BIRD CAGES.

Water Coolers, Water Filters, Bathing Apparatus, Tea Trays, &c.

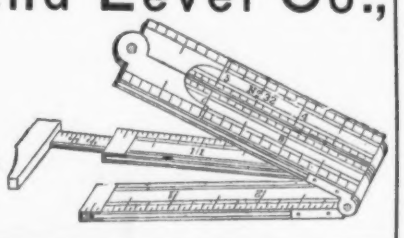
Send for Illustrated Catalogue.

Stanley Rule and Level Co.,

WAREROOMS,

REMOVED TO

No. 35 Chambers Street,
NEW YORK.



QUACKENBUSH, TOWNSEND & CO.,

Successors to

SEARS, LEAVITT & CO.,

Importers and Wholesale Dealers in

Hardware, Cutlery, &c.,

59 and 61 Reade Street, New York.

DEPOT FOR

THOMAS JOWITT & SONS, (Sheffield, England,) Celebrated FILES AND HORSE RASPS. Rough and Ready and CLIPPER SCYTHES, Warranted.

THOS. JOWITT & SON TESTED CORPORATE MARK

"BEAVER" (American,) FILES AND HORSE RASPS. "WIDE AWAKE" AXES.

UNION NUT COMPANY,

78 Beekman Street,

Manufactories at Unionville, Ct. NEW YORK

Carriage, Tire, Machine, Stove, Plow & Agricultural Bolts,

COMMON AND PATENT WOOD CHOKER MOUSE TRAPS,

Forged Nuts, Hot and Cold Pressed Nuts, Washers, Coach Screws, Bolt Ends, Fifth Wheels, Axle Clips, Shaft Couplings, Felloe Plates, Steps, &c.

AGENTS FOR

STANDARD RULE CO.'S Rules and Levels,
COBB & DREW'S Plymouth Rivets.
VALLEY HARDWARE CO.'S
Hammers, Bow Pins, Saw Setts, &c.
R. HUMPHREY & CO.'S
Tin Spoons, Washers, Brass Ferrules,
RIPLEY MFG. CO.'S
Mouse Traps, Mallets, Base Knobs, Bung Starts, &c.

Trade Discount liberal.

"The BEST in the WORLD!"

BLATCHLEY'S Horizontal Ice Cream Freezer,

(Tingley's Patent.)

For Saloons, Hotels, Ice Cream Manufacturers, or Families.

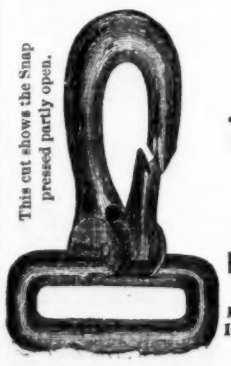
STANDS ENTIRELY UNRIVALED!

With the aid of *this* Freezer a most delicious dessert of Ice Cream, Water Ice, or Frozen Fruits, Custards, &c., may be frozen in from five to eight or ten minutes, at the will of the operator, with almost no trouble and but trifling expense. It is acknowledged the "Best Freezer in the World," and a luxury no family should be without.

The Closed Head will save Ice enough in one season to pay for the Machine. The Tub requires but one filling to freeze. Sizes 3 to 40 quarts. For sale by the trade generally.

Applications should be accompanied by business card.

CHAS. G. BLATCHLEY, Manufacturer, 506 Commerce St., Philadelphia, Pa.



This cut shows the Snap pressed partly open.

MIDDLETOWN TOOL CO.,

MIDDLETOWN, CONN.,

MANUFACTURERS OF

The Celebrated "Baldwin" Plane Iron,
HENSHAW'S PATENT HARNESS SNAPS
GERMAN HARNESS SNAPS,
PAT. GAFF TOP-SAIL SELF-MOUSING SHIP HOOKS

Plow, Fillettster & Dado Stops of all kinds. Set Screws for Plows, Bench Plane Starts, &c. Patent Washer Cutters. Plane Iron Screws to order of any size.

Send for Illustrated Catalogue and Price List.

Many & Marshall,

48 Warren St., N. Y.

SASH CHAIN.

Chain and Pulley for Heavy Sash

THE BEST & CHEAPEST MADE.

Manufacturers of every description of

BUILDERS' HARDWARE,

Pure Bronzed Metal and Hand-Plated Knobs, Hinges, &c.,

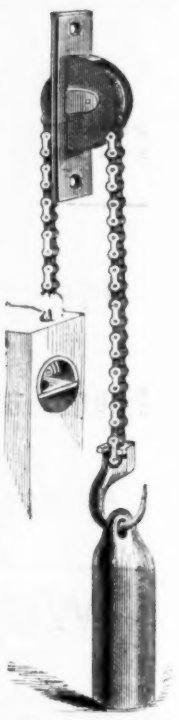
Agents for Gautier's Black Lead Crucibles.

Agency and Depot of the TRENTON LOCK COMPANY.

THOMAS MORTON,

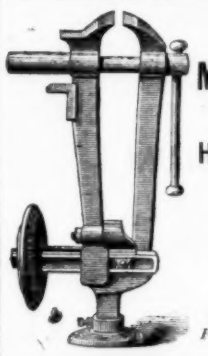
Manufacturer of

Brass & Copper Chain,



And patented attachments for same, for suspending windows, from 100 to 1500 lbs. Sashes can be suspended with my Chain and attachments in a shorter time and with less trouble than by using the ordinary common cord. I am now offering the Chain and fastenings cheaper than any other in the market. Also manufacturer of the MORTON & BREMNER'S Straight and Circular Spring Balances. Established in 1842.

Office, No. 15 Murray St., N. Y.



Patent Parallel
Machinist's Vise
Manufactured by
Harrisburg Foundry and Machine Company,
Harrisburg, Pa.

☞ *Send for Circular and Price List.*

Schweitzer Mfg. Co.,

57 Reade Street, New York.

CONTINENTAL LOCKS,

Made of Wrought Iron or Brass, very superior in quality, and only an auger used in mortising.

SCHWEITZER PAD LOCKS,
EXCELSIOR COMPASSES.
EXCELSIOR DIVIDERS,
WITH
STUBS' STEEL POINTS,

Best and Cheapest Goods in the market. Sole Agents for the United States for

NEWBOULD'S FILES AND TOOLS
French Coffee Mills.
NOBLE MFG. CO., Tools, Ship Augers, &c.
Emery, Waterhouse & Co., Shovels & Spades

We also make a superior
AXE. *"Queen of the Forest," "Wood Chopper's Pride," &c.*
Disston's Saws. (Largest Stock in the City).
General dealers in
FOREIGN & DOMESTIC HARDWARE.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.—Solid Cast Steel........℘ ℔ 14c
Peter Wright's........℘ ℔, gold, 12½c
Wilkinson's........11½c
Eagle........11 cents currency—dis 15 @ 15&5 %
Apple Parers.—Reading Improved........per doz $8 50
Victor, Improved........" 8 25
Union, "........" 8 00
Turn Table, "........" 8 50
Discount for 25 dozen lots........" 50c
Axes.—Mann's Light........Per doz. $13 00 @ 14 00
Hunt's Light........" 14 00 @ 14 50
Red Indian, all sizes........" 12 50 @ 12 00
Red Chieftain, all sizes........" 12 30 @ 13 00
Crown Prince........" 13 50 @ 13 00
Augers and Auger Bits.—Pierce's Pat. Twist Bits........dis 25 %
Bates' & Ives' Bits........dis 30&10 %
Douglass' Bits........dis 30&10 %
Hamden Auger Bits........dis 30&10 %
Cook's Bits........dis 40 %
Bonney's Pat. Hollow Augers........dis 25 %
Stearn's Patent Hollow Augers........dis 25 %
Russell Jennings' Bits........dis 10 %
Bates' & Ives Nut Augers........dis 30&10 %
Douglass Nut Augers........dis 20&10 %
Watrous' Ship Augers........dis 10 %
Balances.—Landers Frary & Clark's........dis 15 %
Chattillon's........dis 15 %
Morton's........dis 15 %
Common Spring, with Hook........℘ doz $1 38 @ 2 00
Bells.—Bevin Bros. Mfg Co. Full Weight Hand Bells........dis 50&10 @ 60 %
Bevin Bros. Mfg. Co., Extra Light Hand Bells........dis 60 @ 60&10 %
Other makers light........dis 60&10 %
Connell's Door Bells........dis 50 %
Great Western and Kentucky, Cow........dis 50&10 %
Boring Machines.—Bates' Mfg. Co., complete with augers........dis 15 @ 20 %
Douglas' Mfg. Co., complete with augers..dis 15 @ 20 %
Common Boring Machines, no Augers.....$4 25 @ 4 00
Angular. " "........5 25 @ 5 00
Bolts.—Eastern Carriage Bolts........dis 70&10 %
Western " "........dis 70&10 %
Philadelphia " "........dis 50&10 %
Wrought Shutter Bolts........dis 45 @ 50 %
Cast " "........dis 30&10 %
Skelly's Phila. Norway iron. finish. points....dis 50&5 %
Braces.—Barber's........dis 40 %
Backus........dis 40&10 %
Bartholomew's American Ball........dis 10&10 %
Spofford........dis 40 %
Butts.—Cast Fast Joint, Narrow........dis 50 %
" " Broad........dis 50 %
Cast Loose Joint........dis 60 %
" Acorn, Loose Pin........dis 45 %
Wrought Loose Pin........dis 35 %
" Table Hinges and Back Flaps........dis 30 %
" Narrow........dis 30 %
" Loose Joint........dis 35 %
" Reversible........dis 35 %
Parker's Blind Butts........ } ....dis 45 %
Shepard's " "........ } dis by the case 50 %
Clark's " "........
Garretson's "........
Lull & Porter's "........dis 25&10 %
Cherritree Blind Butts for wood........dis 50 %
Chains.—German Halter........new gold list dis 10 %
" Coil........new gold list dis 10 %
Galvanized Pump........℘ ℔ 15c
Best Proof Coil Chain—
℘ ℔...... 13½ 10½ 10 9½ 9¼ 9 8½c gold
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ in.
By the cask, 560 lbs., discount ½c per lb. Common Chain, ½c per lb. less than proof.
Chisels.—Socket Framing........dis 60 @ 60&10 %
Socket Firmer........dis 60 @ 60&10 %
Tang "........dis 40 @ 40&10 %
Beaty's Framing and Firmer........dis 10 @ 15 %
Casters.—Porcelain Wheel........dis 25&10 %
Iron........dis 25&10 %
Brass........dis 25&10 %
Clothes Wringers.—Universal........per doz $72 00
Novelty........" 72 00
Reliance........" 72 00
Providence........" 72 00
Orders for 5 dozen, discount $3 per dozen.
King Wringers (Iron Frame)........per doz $68 00
Coffee Mills.—Common Box and Side.....dis 10 @ 15 %
Patent Box and Side........dis 10 @ 15 %
Cutlery.—American Pocket (best)........dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co. Manufacturers' net prices.
Drawing Knives.—Hart Mfg. Co.'s ..dis 60 @ 60&10 %
Concave Adjustable Handle........dis 10 %
Beatty........dis 10 @ 15 %
Fry Pans.
Tinned........dis 20 %
℘ doz..$3·00 3·25 3·62 4·00 4·50 5·00 5·50 6·00 7·50
No..... 0 1 2 3 4 5 6 7 8
Burnished........
℘ doz..$2·80 3·00 3·38 3·75 4·12 4·30 5·00 5·62 6·75
No..... 0 1 2 3 4 5 6 7 8
Files.
Nicholson Mill Files.... new list, $5 00 to £ cur dis 10 %
" Bastard...... " 5 00 to £ cur dis 10 %
" Taper...... " 5 00 to £ cur dis 10 %
Butcher's Mill........$5 75 to £ gold
" Bastard........5 50 to £ gold
Taper........5 50 to £ gold
Moss & Gamble—Mill, Taper and Bastard........5 50 @ 5 25 to £ gold
Fluting Machines.
Royal, No. 1, 4½ inch Rollers........list $6 00
" No. 2, 6 " "........list 7 00
K. F. M.—4½ in. rolls........5 00
" —6 in. rolls........6 00
Hammers.
Yerkes & Plumb's........dis 10 %
Hammond & Son's........dis 5 %
Veree........dis 5 %
Hatchets.
Beatty's........dis 10 @ 15 %
Shingling and Half. { ℘ doz...$7·00 7·50 7·75 8·00 / No...... 1 2 3 }
Yerkes & Plumb........dis 10 %
Shingling and Half. { ℘ doz...$7·00 7·50 8·00 8·50 / No...... 1 2 3 4 }
Claw.... { ℘ doz........$7·50 8·00 / No........ 1 2 3 }
Hinges.—Strap and T, advanced Feb. 6.....dis 25&7½ %
Bonney's No. 1 Gate........dis 25 %
" No. 2 and 3........dis 35 %

Horse Nails.

	Nos. 6	7	8	9	10
Ausable........	27	25	24	23	22
Globe........	28	26	25	24	23
Brundage........	26	24	23	22	21

	Nos. 5	6	7	8	9	10
Putnam........	32	28	26	25	24	23

On Ausable, Globe and Brundage 1000 ℔ lots.....dis 5 %
Knobs.—Door, Mortise and Rim.
Makes in Combination........new list dis 45 %
Extra discount for cash 2 %
Porcelain and Mineral........dis 20 %
Locks and Latches.—Rim and Mortise........dis 45 %
Extra discount for cash 2 %
Till and Cupboard........dis 25 %
American Padlocks........dis 50 %
Scandinavian Pad Locks.
℘ doz......$10·50 10·50 12·00 12·00 15·00 15·00 } dis 15 %
No........ 9 9½ 10 10½ 11 11½
℘ doz........$18·00 18·00 24·00 22·00 } dis 15 %
No........ 12 12½ 13 13½
Trunk Locks........dis 5 @ 10 %
Thumb and Roggens Latches........dis 25 %
Lanterns.—Square Candle and Oil........dis 10 %
Globe for Oil........dis 10 %
" " Kerosene........dis 10 %
Tubular Lanterns........dis 10 %
Mattocks.—Long and Short Cutter........dis 25 %
Western Pattern........dis 25 %
Pennsylvania Pattern........dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets........dis 20 %
Stebbins' Gates........dis 60 @ 60&10 %
Lincoln's "........dis 40 @ 40&10 %
Landers, Frary & Clark's Petroleum...dis 10 @ 10&10 %
Taylor's Petroleum Faucets........dis 20 @ 20&10 %
Brass Liquor Cocks........dis 20&10 %
Meat Cutters.—Dixon's........dis 10 %
Woodruff........dis 10 %
Stowe........dis 10 %
Hale's........dis 25 %
Stuffers........dis 10 %
Planes.—Auburn Tool Co., "Bench"........dis 30 %
Taber Plane Co., "Bench"........dis 30&10 %
Metallic Plane Co........dis 25&5 %
Evans Pat. Circular........net
Plane Irons.—American........list net
Butcher's........gold £, $5 50
Picks.—Philadelphia........net
Pittsburgh........net
Plumbs and Levels.
Stanley Rule and Level Co........dis 60 @ 60&10 %
Wm. Johnson, (Stanley List)........dis 60 @ 60&10 %
Rakes.—Cast Steel Garden........dis 33⅓ %
Malleable Garden........dis 33⅓ %
Wood Head Iron Teeth........dis 30 @ 40 %
Rules.—Stanley Rule and Level Co.... dis 60 @ 60&10 %
Steven's and Hubbard's........dis 60 @ 60&10 %
Steelyards.—American Pattern........dis 15 %
℘ doz.....$5·50 7·00 9·00 10·00 11·00 12·00
No........ 50 100 150 200 250 300
English Pattern........dis 15 %
℘ doz......$7·00 8·67 10·67 12·67 14·67 16·67
No........ 50 100 150 200 250 300
L. F. & C. Excelsior........dis 10 %
℘ doz........$9·00 10·00 12·00 15·00 18·00 21·00
No........ 50 100 150 200 250 300
Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened........℘ doz. $11·00 net
Clipper No. 10, Boxed and Sharpened......℘ doz $10·50
" " 5, " "........" 10·00
Common Scythes........℘ doz $7·00 @ 10·00
Squares.—Steel and Iron, new list........dis 50 %
Saws.—Disston's Cross Cut........dis 12½ %
Disston's Hand........dis 12½ %
W. McNiece's H'd. Cross-Cut & Circ'r, new list..dis 15 %
Boynton's Lightning, new list........dis 30 %
Shovels and Spades.
Rowland's Plain Back, list Feb. 1873........dis 20&10 %
" Back Strap "........dis 20&10 %
Oliver Ames & Sons........new list dis 12½ %
Brady Shovel Co........dis 12½&5 %
Sad Irons.—Richmond (polished face).....per lb. 4⅞c.
Coquanock (polished face)........" 4⅞c.
Stone.—Arkansas Oil, No. 1........℘ ℔ $1·38
Turkey Oil, No. 1........" 1·00
Washita Extra........" 30c
" No. 1........" 22c
" " 2........" 18c
Hindostan 8 in........" 5½c
" Axe........" 7c
Screws.—Iron........ new list, Jan. 1st, 1874, dis 52½ %
Brass........dis 52½ %
Spoons.—
Plated Spoons, Rogers Bros.'...new list dis 30 @ 30&5 %
Britannia, Spoons........dis 40 @ 40&5 %
German Silver........new list dis 10 @ 15 %
" Light........new list dis 15&5 %
Lalance & Grosjean Iron........dis 10 %
Springs.—Gray's Door........dis 40 %
Torry's Door........dis 40 %
Stocks and Dies........dis 15 %
Stove Polish.—Gem........℘ gross, $5·00
Onyx........$5·00
Try Squares.—Winterbottom........dis 10 @ 15 %
Stanley Rule and Level Co........dis 45&10 %
Willis Thrall, No. 2........dis 30&10 %
Disston's No. 2........dis 40 %
Tacks, &c.—Half Weight Tacks........dis 70 %
" " by the case.....dis 70&7½ %
Clout and Finishing Nails........7½ %
" " " by the case........dis 7½ %
Traps.—Genuine Oneida—Newhouse list........dis 20 %
Imitation " " "........dis 30 %
Vises.—Solid Box........℘ ℔ net 15c
Wrenches.—Coes Genuine........dis 40 %
Coes Imitation Wrought Bar........dis 50 %
" " Malleable Bar........dis 60 %
" " (Kellogg) Malleable Bar.....dis 50 @ 10 %
Tafts Pattern (Wrought Bar)........65 %
" " Kellogg's (Nail Bar)........dis 65&10 %
Philadelphia Tool Co.'s Pat. Duplex........dis 25 %
" " " Improved Baxter........dis 25 %
" " " Adjustable Fork........dis 25 %
Wire.—No. 0 to 18........dis 35 @ 37½ %
No. 19 to 26........dis 40 @ 42½ %
No. 27 to 36........dis 45 @ 47½ %
Coppered 0 to 12........dis 15 @ 20 %
Tinned Broom Wire........dis 20 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

Feb 16, 1874.

Augers—C. S. Cut, French, Swift & Co........dis 30&10 %
Bits, Auger—Pierce's........dis 30 %
Snell Mfg. Co........dis 20 %
Jennings........dis 10 %
Bells, Cow—Yaw's Genuine........dis 25 %
Bolts—Carriage and Tire, Square Neck........dis 70&10 %
Diamond Neck........70&10&10 %
Braces—Bit, Spofford's Patent........dis 40 %
Brads, Cut........dis 50&7½ %
Boards—Stove, Brooks' Patent........dis 30 %
Butts—Brass........dis 25 %
Cast Loose Joint........dis 50 %
" " Pin........dis 45 %
" " " Japanned........dis 45 %
" " " Silver Tipped........dis 25 %
Wrought Narrow........dis 30 %
" Broad, Loose Joint........dis 35 %
" Table and Back Flaps........dis 30 %
Wrought Butts, Loose Pin........dis 35 %
Belting—Rubber........dis 30 @ 30&5 %
Leather new list........dis 30 @ 30&5 %
Beaters, Egg, "Peerless"........per doz $4·00
Brick—Bath (box of 2 doz) Best English........$1·50
"Rutherford"........$1·25
Chalk—White, Carpenter's........℘ gross, 50c
Red, Carpenter's........" 75c
Blue, "........" 90c
Chisels—Firmer Socket........dis 60&10 %
Framing Socket........dis 60&10 %
Corner Socket Chisels........dis 60&10 %
Slick's Carpenters'........dis 60&10 %
Castings—Malleable........℘ ℔ 10½c
Cherry Seeders........per doz $12 00
Elbows—Corrugated........ 5 5½ 6 7
Charcoal........$4·25 5·25 5·25 6·50 } dis 15 %
Russia........10·00 13·00 13·00 14·00
Files—Wheeler, Madden & Clemson's........dis 45 %
Freezers Ice Cream—"Champion"........dis 33⅓ %
Gates—Molasses—
Patent Self-Measuring........℘ doz., $42 00; dis 20 %
Hinges—Window Blind—
Clark's No. 20........
Shepard's Standard, and Clark's........$1·50 per doz net
Wrought Strap and T........dis 50 %
Hods, Coal—Plain, Black and Galvanized........dis 35&7½ %
Funnel, Black and Galvanized........dis 10 %
Fancy and Helmet........dis 10 %
Palace Coal Vases........dis 10 %
Hammers—Maydole's........net
Yerkes & Plumb's........net
Hooks and Staples—Wrought........dis 5 @ 10 %
Hooks—Belt........dis 60&10 %
Hasps and Staples—Wrought........dis 50 %
Sad Irons........dis 60&10 %
Kettles—Brass........4⅞c
Enameled........℘ ℔, 50 @ 55c
Knives, Drawing—Oval No. 1........dis 40 %
Razor Blade........dis 60&10 %
Lanterns "Peerless,"....No. 1 5 10........dis 50&10 %
℘ doz $26 00 $11 25 $13 75 dis 10 %
Gem, with guards........
Tubular........$6 50
" with Guards........11 50
Machines—Apple Paring, "Reading."..$8·00 @ 8·50 ℘ doz
Mills, Coffee—Box and Slide, common........dis 15 %
Box Union and Eagle........dis 15 %
"Enterprise"........dis 20 %
Nails—Clout and Finishing........dis 7½ %
Shoe........dis 7½ %
Horse, Ausable........No. 5 6 7 8 9 10
30 27 25 24 23 22c
" " Finished & Pointed........add 1c ℘ ℔
" 1000 lbs........dis 5 %
" Clinton........No. 6 7 8 9 10
22 20 19 18 17c
Packing—Rubber........dis 30 @ 30&5 %
Pencils, Slate—Soapstone........4 5 6in.
Case lots........30 40 50c. ℘ 100
Paint—White Lead, U. S. Gov't........dis 20 %
Rivets—Iron, Black and Tinned........℘ ℔ 9 c
Copper........dis 20 @ 25 %
Rope—Manila, ½ inch and larger........dis 10 %
Rules—Boxwood and Ivory, Stephens........℘ ℔ 15½c
Screws—"American Screw Co"—........dis 60 %
Flat Head, Iron........dis 52½ %
Flat Head, Brass........dis 52½ %
Staples—Blind, Boardman's Pat., ½ & ⅝........℘ ℔ 37c
Skates—White's........dis 25 %
Barney & Berry's—N. Y. Club Japanned Top......$2 20
" " B. & B. Club Blued Top........2 85
Straps, Skate—Russet and Black........dis 25 %
Spoons, Iron Tinned........dis 10 %
" by the case........dis 20 %
Plated Rogers' A No. 1........dis 30&5 %
Britannia........
Squares—Steel and Iron........dis 40 %
Shoes, Horse—H. Burden & Sons........new list 50 %
Shovels & Spades—Shepard, Forsyth & Dennison..℘ keg $5·50
Saws—Henry Disston & Sons........dis 20 %
Scales—Buffalo Scale Works........dis 10 %
Fairbanks........dis 25 %
Shears—Seymour's........dis 15 %
Traps, Steel—Newhouse........dis 60 %
Tacks—Half Weight Am. Iron........dis 20 %
Vises—Parallel, Buffalo........dis 70&7½ %
Wrenches—Coes' genuine........dis 15 %
Coes' Imitation........dis 40 %
Tafts' Pattern........dis 50&10 %
Ware—French, Tinned and Iron........dis 65&10 %
Stamped and Japanned........dis 30
Cast Iron Hollow........net
........dis 25 %
Tin Plates.—Add for each X........2·50
10x14, IC. Charcoal...$12·00 | 14x20 C. terne...11·75 @ 12·00
12x12, "... 13·50 | 20x28 C. "........25·00
12½x17, "... 12·50 | 20x28 X. "........29·25
14x20, "... 14·00 |
Pig Tin—Straits........35c @ 36
Bar Tin........37c
Solder........No. 1, 20 c; No. 2, 18 c
Sheet Zinc—
"Lasalle"........570 100 ℔ casks
$10·00 10·30 ℘ 100 ℔s
Sheets........$10·0
Iron Wire—Bright and Annealed........dis 35 %
Coppered........dis 30 %
Tinned........dis 15 %
Tinned Broom, { Nos. 20 21 22 / 20c 21c 21c } ....dis 20 %
Copper—Sheathing 14 @ 18 oz........℘ ℔ 33c
Planished........℘ ℔ 39 @ 41c
Bottoms........℘ ℔ 35c
Bolts........℘ ℔ 35c
Braziers' Sheets........℘ ℔ 37c
Sheet Iron.—
18 Common........$5 30
24 Common........5 50
24 W. D. Wood & Co., Smooth Finish........6 10
Am. Russia........A. B.
14c 13c
Gen. Russia, No. 1 stained........20c
" " clean........21c
Galvanized........dis 15 %

PITTSBURGH.

Card Rates, 60 days.

Flat Bar—
1½ to 4 x ⅜ to 1 inch..3·3c | 1½ & 1⅝ x ⅜ to ¾ in....3·5c
4½ to 6 x ⅜ to 1 inch..3·5c | 1 & 1⅛ x ⅜ to ¾ in....3·6c
1½ to 6 x 1⅛ to 1½ in..3·7c | ⅞, ¾ & ⅝ x ⅜ to ⅝ in..3·7c
Horse Shoes.—
All sizes........4·8c | Nail rods........7·2c
Heavy Bands.—
3½ to 6 x ¼ & 5-16 in..3·9c | ¾ to 1½ x ¼ & 5-16 in...4·3c
1½ to 3¼ x ¼ & 5-16 in..4·0c | ⅝ to ¾ x ¼ & 5-16 in...4·5c
Light Bands.—
3 to 6 x 3-16 to No. 12..4·3c | 1 to 1½ x 3-16 to No. 12..5·9c
1½ to 2¾ x 3-16 to No. 12........4·5c | ⅝ to ⅞ x 3-16 to No. 13..5·5c
Hoops.—2½ to 3 in....4·6c | 1 in........5·8c
3½ to 4½ in........4·8c | ⅞ in........6·3c
1⅞ to 2 in........4·8c | ¾ in........6·8c
1⅜ to 1 11-16 in........5·1c | ⅝ in........7·3c
1⅛ & 1¼ in........5·40 | ½ in........7·9c
Round and Square.—
1 to 1½ in........3·3c | ½ to 7-16........4·0c
2 to 2⅞ in........3·6c | ⅜ in........4·1c
3 to 3½ in........3·8c | 5-16 in........4·5c
3⅞ to 4 in........4·3c | ¼ in........5·9c
⅝ to 9-16 in........3·7c | 3-16 in........6·9c
Oval Iron.—
⅜ to 1½ in........3·9c | ½ in........4·3c
⅝ to ¾ in........4·1c | ⅜ in........4·9c
Half Oval and Half Round.—
¾ to 1½ in........4·2c | ½ in........5·4c
⅝ to ¾ in........4·7c | ⅜ in........6·9c

	Bolled.	Charcoal.	Jun.
Sheet Iron, 10 to 14........	5·3	6·8	8·3
" 15 to 20........	5·5	7·0	8·5
" 21 to 24........	5·7	7·2	8·7
" 25 to 26........	5·9	7·4	8·9
" 27........	6·1	7·6	9·1

All sheets over 28 in. wide, ½c. ℘ ℔ extra.
Tank Iron—
3-16, ¼ & ⅜ in. thick..5·3c | Heads flanging........9·0c
Boiler Plate Iron.....8·0c | Plow Slabs........5·9c
Heads not flanging....6·2c | Plow Wings........6·4c
Railroad Iron—Countersunk and Punched.—
1½ x ⅜, 7-16 & ½ in ...4·8c | 1½, 1¾ & 2 x ½ & ⅝ in..3·8c
1½ x ½ & 5-16 in........3·3c | 1½ x ⅜ in........4·0c
Extras for Cutting to Length.—
Flat bars and rounds and squares........0·1c | Light bands and wagon box iron........0·2c
Flat bars for tire......0·1c | Hoops........0·3c

The following are the Card rates of Lewis, Oliver & Phillips:
Iron, standard list, assorted sizes, for large orders, 3·3c, card rate, 2 % off net.
Flat Rail (1¼x¼), punched and coun'sunk..4·7c ℘ ℔ net
Iron Wedges........5c ℘ ℔ net
Norway Nail Rods........9½c ℘ ℔ net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point)........6 c ℘ ℔ net
Beetle Rings........9½c ℘ ℔ net
Fence Pickets—
⅜ round, bent to shape. 30c ℘ ft. of fence, less 5 % off net
Discount off Standard List.
Carriage and Tire Bolts (new list)........70&5 % off net
Plow Bolts........30&5 % off net
Stove Bolts........5 % off net
Machine and Square Head Bolts........30 % off net
Coach and Lag Screws........30 % off net
Bolt Ends........25 % off net
Harrow Teeth, in lots of 1 ton or more, packed in casks, 1 in. diam. 3¾c ℘ ℔ net; ⅞, ¾ in. diam. 3½c ℘ ℔ net; ⅝ in. diam. 4½c ℘ ℔ net.
Patent Headed Harrow Teeth, packed in casks, ½c ℘ ℔ ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 7c ℘ ℔ net; 9-16 in. diam. 8c ℘ ℔ net; ½ in. diam. 9c ℘ ℔ net. 1c ℘ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinges, ⅝ to 1 in. diam. 9½c ℘ ℔ net; ⅜ in. diam. 10½c ℘ ℔ net; ½ in. diam. 12½c ℘ ℔ net.
Screw and Strap Hinges, in lots of 100 pairs or more, 14 to 36 in. long, 6c ℘ ℔ net; 8, 10 & 12 in. long, 7½c ℘ ℔ net.
Strap and T Hinges..40 % off net, delivered as customary
Screw Hitching Rings........$5 50 ℘ 100 net
Duck Nest Tuyere Irons........$15 00 ℘ doz net
Cast Iron Washers........℘ ℔ 4½c net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long........℘ ℔ 4½c net
1 to 2 in. diam. from 4 to 8 ft. long........" 4⅞c net
1 to 2 in. diam. from 1½ to 4 ft. long........" 5⅜c net
⅝, ¾ and ⅞ in. diam. over 4 ft. long........" 5⅞c net
⅝, ¾ and ⅞ in. diam. from 1½ to 4 ft. long........" 6¼c net

WAGON HARDWARE.

Wagon Box Strap Bolts—
10 in. long by 7-16 at Screw End, ℘ set of 8 bolts.. 55c
12 " ½ " " 8 " .. 70c
10 " 9-16 " " 8 " .. } 90c
12 " 9-16 " " 8 " .. }
14 " 9-16 " " 8 " .. $1 00
10 in. long by ⅝ at Screw End, ℘ set of 8 bolts.. } 1 00
12 " ⅝ " " 8 " .. }
14 " ⅝ " " 8 " .. 1 10
16 " ⅝ " " 8 " .. 1 20
5c ℘ set for each additional inch over 14 in. All lengths made.
Wagon Box Rods, narrow track, each........18c
" " wide track, each........20c
Single Tree Irons, ℘ set of four pieces........38c
Wrought Iron Bolster Plates, 2¾ in. wide, ℘ set........60c
" " 3 " "........65c
" " 3¼ " "........70c
" " 3½ " "........75c
Wagon Brake Ratchets, each........16½c
" " " finished with guard, each..45 c
Wrought Hammer Straps, heavy pattern, each......16 c
" " light " each......13½c
" Rub Irons, each........11 c
Stay Chain Hooks, each........8 c
Double and Single Tree Clips, figure 1, each........9 c
" " " " 2, each........10 c
" " " " 3, each........12 c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 100 sets........dis 25 %
Wagon Box Staples 1½ to 2½ in. to clinch. ℘ 1000 $12 50 net
" " Box Iron, to rivet on. ℘ 1000 8 50 net
Neck Yoke Eyes, each........5½c net
" " with ⅜ rings, each........8 c net
King Bolts, ⅝, 1, 1⅛, and 1¼ in. diam........℘ ℔ 4½c net
Wagon Rivets, ex. large, flat, oval and steeple head, ½ in. diam. all lengths........" 9 c net
Wagon Rivets, 3-16 in. diam., all lengths........" 11 c net
" " & Nails, in 5 ℔ paper boxes....℘ ℔ 1c extra
" " in 25 ℔ wood "........" ½c extra
Wagon and Hinge Nails, ¼ in........℘ ℔ 17 c net
" " " 3-16 in........" 19 c net
Double Tree Plates........ }
Coupling "........ } " 9 c net
Tongue "........ }
Neck Yoke Plates........" 12 c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ℘ ℔ as Band Iron.
Wagon Chains, Stay Lock and Tongue, 5-16 in, ℘ ℔ 11½c net ¼ in., 12½c. net

DETROIT.

(Reported by Messrs. Jewett & Root.)

Tin Plate.—Best Charcoal
IC, 10x14........$13 00
IX, 10x14........15 75
XX, 10x14........18 50
IC, 12x12........13 50
IX, 12x12........16 25
IC, 14x20........14 00
IX, 14x20........16 75
XX, 14x20........19 50
XXX, 14x20........22 25
XXXX, 14x20........25 00
DC, 100 Plate........12 50
DX, "........15 25
DXX, "........18 00
DXXX "........20 75
DXXXX 100 Plate........23 50
IX, 14x14........25 00
IC, 10x14 W........12 50
IX, 10x14 W........15 25
Roofing Tin.—Best Char.
IC, Terne, 14x20........$12 25
IX, " 14x20........15 00
IC, Terne, 20x28........26 00
IX, " 20x28........30 50
Coke Tin.—
IC, 10x14 Coke........$11 00
IX, 10x14, Coke........13 75
IC, 14x20, "........12 00
Copper.—
Sheathing........33c
Copper Bottoms........36c
Planished Copper.—
Sheathing, 14x48........41c
Boiler Size, No. 7........43c
" " No. 8........43c
" " No. 9........43c
Pig Tin.—Large Pigs..35c
Small Pigs........36c
Bars........37c
Solder.—No. 1........18c
No. 2........20c
Bright Wire.....dis 35 %
Sheet Iron.—
No. 18 Am. Com........5 50
No. 24 Am. Com........5 50
Pat. Am. Russia "A," Nos. 24, 25 & 26........c
Pat. Planished Russia..c
Russia No. 9, 10, 11&12...c
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $6 10
" 21 to 24........6 30
" 25 & 26........6 50
" 21 to 24 Char'l..7 80
" 25 & 26 "..8 00
Sheet Zinc.—Any width........10 c

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal........$12·00 @ 14·00
I. X. 10x14 Charcoal........15·50 @ 17·00
I. C. Terne 14x20........11·00 @ 12·50
I. C. Terne 20x28........24 00 @ 25·50
I. C. Continuous........28·00
Block Tin.—
Pigs........37½c @ 38c | Bars........℘ ℔ 39c
Solder.—
S. & Co........℘ ℔ 28c | A 1........℘ ℔ 24c
| Roofing........" 22c
Lead.—Pig..℘ ℔ 7½c @ 8c. | Bar........℘ ℔ 8c @ 9c
Copper.—
Ingot........℘ ℔ — | Sheets, 6 to 8 lb...℘ ℔ 41c
Planished... " @ 40c | " 10 to 12 lb..." 35c
Sheathing... " @ 35c | Braziers 13 lb........" 35c
Copper Drops 37c @ 38c | Copper Bottoms..." —
Zinc.—Cask, 500 to 1000 lbs........℘ ℔ 11 c
Case, 100 lbs........" 11½c
Slab........8½c @ 9c
Brass.— | Roll, No. 38 to 40...℘ ℔ 50c
Roll, No. 6 to 30. ℘ ℔ 45c | Wire, No. 0 to 20...℘ ℔ 50c
" 30 to 38. " 65c | " 20 to 25..." 60c
Babbit Metal.— | Black Lead........℘ ℔ 25c
Sellew & Co......℘ ℔ 35c | Market........" 15c
Antimony........℘ ℔ 20
Bismuth........℘ ℔ $6 00
Nickel........℘ ℔ $3 50
Sheet Iron.— | Am Russia A..℘ ℔ 14 @ 15c
Russia......℘ ℔ 20c @ 22c | " " B.. " 13 @ 14c

	Com. B.	Smooth Fin. S. L. U.	Smooth D Re'fd.
15 to 20........	6·0c	7·5c	9·0c
22 to 24........	6·2c	7·8c	9·2c
26........	6·4c	8·0c	9·4c
27........	6·6c	8·2c	9·6c

Galvanized Iron.—Full bundles........dis 25 %
Nos. 18 to 20........15c | No. 27........18c
22 to 24........16c | 28........20c
25 to 26........17c |
Bar Steel.—Silver, ℘ ℔ 21c; Crescent, 17½c.
Iron Wire........dis 25 %
Enameled Ware........dis 33⅓ %
One Piece Corrugated Elbows........dis 10 %
Iron Gas Pipe........dis 65 %

Charcoal Iron.		Russia Iron.	
4½ inch........℘ doz	$3·75	4½ inch........℘ doz	$8·00
5 "	4·25	5 "	10·00
5½ "	5·25	5½ "	13·00
6 "	5·25	6 "	13·00
7 "	6·50	7 "	14·00

Leader Elbows—Flat Crimp Retinned.—

℘ doz.		℘ doz	
2-inch........	$2 00	2½-inch........	$2 25
3-inch........	2 50	3½-inch........	3 00
4-inch........	3 50	4½-inch........	4 00

Sheet Iron Bread Pans........℘ ℔ 12c
American Broilers........℘ doz, $18·50
Tinmen's Machines........net list
Sad Irons........℘ ℔, 5½c
Brass Kettles.—Ansonia........48c

Steel.

THREE 1st CLASS PRIZE MEDALS. CLASSES 1, 21, 22, Great Exhibition of Industry, LONDON, 1851.

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1st UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

LOCKER BROTHERS,

SUCCESSORS TO

SAML. COCKER & SON,

(Established 1752.)

SHEFFIELD, ENGLAND.

MANUFACTURERS OF

CAST, SPRING, SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION.
BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;
Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS,
HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS,
FISH HOOKS, NEEDLES. &c.

ALSO

GENERAL MERCHANTS.

WM. JESSOP & SONS,

MANUFACTURERS OF

STEEL,

AND IMPORTERS OF IRON

SHEFFIELD, ENGLAND.

PRINCIPAL DEPOTS:

NEW YORK, Nos. 91 and 93 John Street.....BOSTON, No. 141 Federal.
ST. LOUIS, No. 714 North Second Street.

AGENCIES:

PHILADELPHIA, Jas. C. Hand & Co.....PROVIDENCE, Nightingale & Kilton.
CHICAGO, Crerar, Adams & Co.....NEW ORLEANS, Folger & Co.
CINCINNATI, Augustus Wessel.....SAN FRANCISCO, Huntington, Hopkins & Co.

F. W. MOSS,

Successor to **JOSHUA MOSS & GAMBLE BROS.**

FRANKLIN WORKS, WADSLEY BRIDGE WORKS, WALKLEY WORKS, } SHEFFIELD, ENGLAND.

MANUFACTURER AND IMPORTER OF

STEEL AND FILES.

Principal Depots: 80 John St., N. Y., and 512 Commerce St., Phila.

MOSS & GAMBLE **SUPERIOR C. S. "FULL WEIGHT" FILES,**

Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel. Also, manufacturer of

Sheet Cast Steel, Shear, German, Round Machinery, Hammer, Fork and Shovel Steel

And GENERAL MERCHANT.

A. M. F. WATSON, General Agent.

WILSON HAWKSWORTH, ELLISON & CO.,

MANUFACTURERS OF

STEEL, STEEL WIRE, &C.,

AND GENERAL MERCHANTS,

CARLISLE WORKS, SHEFFIELD, ENGLAND.

AGENCIES:

New York, 72 John Street.
Philadelphia, 505 Commerce Street.
Boston, 21 Oliver Street.
New Orleans, La., 111 Gravier St.

BARROW HÆMATITE STEEL COMPANY,

LIMITED.

BARROW IN FURNESS, LANCASHIRE, ENGLAND.

MANUFACTURERS OF

Steel Rails, Tyres, Wheels,

Axles, Shafting, Boiler & Ship Plates, Bessemer Pig Iron, etc., etc.

CHAS. CONGREVE & SON,

Sole Agents for the United States,
104 & 106 John Street, opposite Cliff Street, NEW YORK.

J. & RILEY CARR,

MANUFACTURERS OF SUPERIOR

STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

ALSO THE CELEBRATED

DOG BRAND FILES,

Unsurpassed, if equaled in quality.

Bailey Lane Works, Sheffield, England.
Warehouse 82 John St., New York.

Established 1810.

CORPORATE MARK STANCH

HENRY MOORE, Attorney.

Steel.

SANDERSON BROTHERS & COMPANY,

(LIMITED)

MANUFACTURERS OF THE

CELEBRATED CAST STEEL,

Warranted Most Superior for Tools and Granite Rock Drills.

DARNALL WORKS, ATTERCLIFFE FORGE, WEST STREET WORKS, } SHEFFIELD, ENGLAND.

IMPORTERS OF FILES,

AND

AGENTS FOR ARMITAGE'S GENUINE MOUSEHOLE ANVILS.

NEW YORK, Edward Frith, 16 Cliff. | NEW ORLEANS, Rich'd Rhodes, 71 Camp.
BOSTON, H. L. Richards, 18 Batterymarch. | BALTIMORE, Md., Wm. H. Cole.
PHILADELPHIA, Wm. H. Sowers. | MONTREAL, Saint Paul St.
CLEVELAND, O., Cleveland, Brown & Co. | NEW HAVEN, Ct., Atwater, Wheeler & Co.

FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of **"CHOICE"** Extra Cast Steel.

Manufacturers of all Descriptions of Steel.
Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

JOHN HOGAN, Agent.

S. & C. WARDLOW,

MANUFACTURERS OF THE CELEBRATED

Cast and Double Shear STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

SHEFFIELD, ENGLAND.

Office of S. & C. WARDLOW, 13 Gold Street, New York.

In calling the attention of consumers of Steel in any of the varieties above enumerated, we would respectfully assure them of our ability to faithfully an article, that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class material in quality, temper, and durability is needed

---

G. SANDERSON & CO.,

Manufacturers of all descriptions of

STEEL.

Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for **Turning Tools, Taps, Dies, Drills,** &c.
Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

☞ *Makers of the Celebrated ROCK BORING DRILL STEEL.*

Warehouse, 57 John Street, New York.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.,

Office in New York City, 56 BROADWAY.

MANUFACTURERS OF

Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING,

Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.

D. G. GAUTIER & CO.,

MANUFACTURERS OF

Hammered and Rolled STEEL of every description

JERSEY CITY, NEW JERSEY.

DUDLEY G. GAUTIER. JOSIAH H. GAUTIER.

CHROME STEEL COMPANY,

MANUFACTURERS OF

CHROME CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

Works and Offices—Kent Avenue and Keap Street, Brooklyn, E. D., N. Y.

Principal Agencies:

Hall, Kimbark & Co., Chicago, Ills. **Harris, Rice & Co.,** St. Louis, Mo. **Horace P. Tobey,** Boston, Mass
Cleveland, Brown & Co., Cleveland, Ohio. **Wood & Leggat,** Hamilton, Ont.

Steel.

Sheffield Steel Works.

(Established in 1848.)

SINGER, NIMICK & CO.

Pittsburgh, Pa.,

Manufacturers of **Extra Quality Tool**

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of **Cast and German**

Spring and Plow Steel,

Elliptic and Side Springs, Seat Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators, Reaper Bars, ow Bars, &c., &c.

Warehouse, 83 Water and 100 First Streets.

ISAAC JENKS & SONS,

Minerva & Beaver Iron & Steel Works

Wolverhampton, England,

MANUFACTURERS OF

"Jenks" Spring Steel, Cast and Swedes Spring Steel,

TIRE, TOE CORK, SLEIGH SHOE, BLISTER & PLOW STEEL.

Also, Plow and other Iron.

VAN WART & McCOY, Agents,

43 Chambers St., New York.

A full assortment of "Jenks" Spring Steel in stock.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.,

Manufacturers of all descriptions of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.,

PITTSBURGH, PA.

Gunpowder.

GUNPOWDER.

DUPONT'S

Sporting, Shipping, and Mining

POWDER.

DUPONT'S GUNPOWDER MILLS

ESTABLISHED IN 1801,

Have maintained their great reputation for 70 years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle and Diamond Grain Powder.

Also, SPORTING, MINING SHIPPING, AND BLASTING POWDER

of all kinds and descriptions.

For sale in all parts of the country. represented by

F. L. KNEELAND,

70 Wall Street, NEW YORK.

GUN POWDER

LAFLIN & RAND POWDER CO.,

21 Park Row, New York,

invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

POWDER

IN EVERY PART OF THE UNITED STATES,

from having agencies and magazines at all prominent points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands Rifle Powder

Orange Rifle, Orange Ducking, Lightning, Audubon.

SAFETY-FUSE at wholesale.

CHICAGO.

(Reported by Markley, Alling & Co.)

Agricultural Implements.—
Scythes—Dunn Edge Tool Co.....dis 30 %
Hay and Manure Forks—Otsego extra C. S.....dis 30 %
Hoes and Garden Rakes—Jackson and Otsego...dis 30 %
Scythe Stones.....dis 25 %
Scythe and Bush Snathes.....dis 25 %
Harvest Rakes and Barley Forks.....dis 25 %
Revolving Horse Rakes.....dis 25 %
Handles—Fork and Shovel.....dis 25 %
Cradles—Nithington, Cooley & Co.....dis 25 %
—Genuine Morgan.....₱ doz net $34 00

Augers and Bits.—
Ives' extra C. S....dis 30 % | Snell's.....dis 10 %
Jennings'.....dis 5 % | " Car Bits.....dis 10 %
Cook's.....dis 30 %

Axes.—Amoskeag Yankee.....₱ doz $13 50
Amoskeag Crescent..... " 14 00
Hunt's Yankee..... " 14 00
Kennebeck Yankee..... " 12 00
Lippincott " ..... " 13 00
" Crown..... " 14 00
" Beveled..... " 14 50
Jefford's Silver Steel..... " 13 00
Red Warrior, Beveled..... " 14 00
Kennebeck, Handled..... " 15 00
Boy's, Handled..... " 12 00

Bolts.—Carriage and Tire.....dis 75 %
Cast Barrel and Shutter.....dis 20&10 %
Wrought Iron Barrel.....add 10 %
" " Square.....net list

Butts.—Cast Fast Joint, Narrow.....dis 30 %
Cast Fast Joint, Broad.....dis 30 %
" Loose Joint.....dis 35 %
" " Pin, Reversible.....dis 35 %
" " Japanned.....dis 35 %
" " Silver Tipped.....dis 35 %
Wrought Narrow, Fast Joint.....dis 30 %
" Broad " " .....dis 30 %
" " Loose " .....dis 30 %
" Loose Pin.....dis 30 %
" Table.....dis 30 %
" Brass.....dis 10 %
Garretson's Blind Butts, Wood.....doz sets $1 75
" " Brick.....doz sets 2 75
Parker's " Wood.....doz sets 1 85
" " Brick.....doz sets 2 75

Casters.—Iron Plate.....dis 25 %
Brass Wheel Plate.....dis 25 %
Porcelain Wheel Plate.....dis 25 %
" " Bed.....dis 25 %
Iron Wheel Bed.....dis 25 %

Chisels.—Butcher's Tanged Firmer.....dis 33 %
" Long Paring.....dis 30 %
Witherby Socket Framing.....dis 50&20 %
" " Firmer.....dis 50&20 %
" " Corner.....dis 50&20 %
" " Slicks.....dis 50&20 %

Coffee Mills.
Box 1 Iron.....$ 3 75 | Box 85 Cast Steel.....$12 00
" 103 " ..... 5 25 | Side 50.....4 75
" 102 " ..... 6 25 | " 60.....5 75
" 107 Britannia... 7 50 | " 70.....7 25
" 106 " ..... 8 50 | " 90.....18 00
" 25 Union.... 10 50 | " 15 Union.....7 00
" 35 " ..... 14 00 | " 20 " 8 00
" 75 Cast Steel.. 10 50 |

Cutlery.—American Table.....dis 20 %
" Pocket.....dis 25 %

Door Springs.—Torry.....₱ doz $5 50
Rubber..... " 4 00
Boon's..... " 5 00

Drawing Knives.—Witherby Tool Co.....dis 50&20 %
Ohio Tool Co.....net list

Files.—Butcher's.....$7 00 £
Nicholson's.....$5 00 @ $5 50 £

Hammers.—
Maydole's.....net list | Yerks & Plumb.....net list
| Cheney.....net list

Handles.
Extra Axe...₱ doz. $3 00 | Coal Pick, No. 1..₱ doz $2 00
No. 1 Axe.... " 2 25 | Sledge, No. 1.... " 2 00
No. 2 Axe.... " 2 00 | Hatchet..... " 65
R.R. Pick, No. 1 " 2 00 | Hammer, A. E.. " 65

Hatchets.—
| 1 | 2 | 3
Amoskeag Shingling.....$7 25 | $8 00 | $8 75
" Claw..... 7 75 | 8 50 | 9 22
" Lath..... 7 50 | 8 25 |
" " Solid Steel..... 12 00

Hinges.—Strap and T.....dis 45&7½ %
Screw Hook and Strap, 6 to 12 in.....net, 9c. ₱ lb
" " 14 to 24 in.....net, 7½c. ₱ lb
Hook and Eye Hinges.....net 12c. @ 16c. ₱ lb
Gate, No. 35, State.....₱ doz $3 50
" No. 3, In and Out..... " 3 50
" Blinn's Pat..... " 7 50

Horse Nails.—Northwestern, 8d.....24c
Ausable, 8d.....24c
Globe, 8d.....20c

Kettles.—Brass.....54c | Enameled.....dis 15 %
| EagleLock Co.....dis 15 %

Locks and Knobs.—
Norwalk Lock Co. dis 45 % | Am. Pad Locks.....dis 35 %
Branford " . dis 45 % | Cont'al Lock Co...dis 10 %
| Woodruff Patent...net list

Meat Cutters.—
Haven's Patent...net list | Stowe's Sausage Stuffers.....net list
Hale's " ...dis 10 % | Enterprise Patent...dis 5 %

Molasses Gates.—
Stebbin's Patent..dis 50 %

Nails.—10d to 60d.....per keg $4 25 @ 4 37½

Oil Stones.—Washita No. 1.....net 30c ₱ lb
Washita Slips.....net 60c "
Hindostan No. 1.....net 9c "
" Axe.....net 10c "
" Slips.....net 15c "

Picks and Mattocks.—Picks, Railroad, Axe Finish.....₱ doz $12 00
Picks, Coal, Axe Finish..... " 10 00
Mattocks, L. C., Axe Finish..... " 15 00
" S. C., " ..... " 14 50
Grub Hoes, Axe Finish, No. 2..... " 7 00

Planes.—Ohio Tool Co., Bench.....dis 25 %
Sciota.....dis 30 %
A. Rowland & Co., Bench.....dis 25 %
" Fancy.....dis 25 %
Bailey Patent Iron.....dis 15 %
Plane Irons, Butcher's.....dis 30 %

Rivets.—Iron, dis 10 @ 15 % | Copper, No. 7 net, ₱ lb, 35c
Tinned.....dis 10 @ 15 %

Rules.—Stanley Rule and Level Co.....dis 50&10 %
Hubbard & Curtiss Mfg. Co.....dis 50&10 %

Sad Irons.—Best A No. 1..... ₱ lb, 1c
" Copper Face Star..... ₱ lb, 4½c

Sandpaper.
Baeder & Adamson's No. 0 to 1½.....per ream, net $4 50
" No. 2 to 3..... " net 5 00
Wiggin & Stevens, No. 0 to 1½.....₱ ream, net, $4 50
" No. 2 to 3..... " 5 00

Sash Locks.—Champion.....₱ gross, net, $12 00
Hopkins & Dickinson.....dis 10 %
Judd's Patent.....dis 10 %
Corbin's Patent.....dis 10 %
Clark's Patent.....dis 20 %

Saws.—H. Disston & Sons.....dis 10 %
Champion X Cut.....₱ foot, net, 60c
M. A. & Co. X Cut..... " " 50c
Lightning Cut..... " " 66c

Screws.—American Screw Co.—Iron...new list dis 50 %
American Screw Co.—Brass.....dis 50 %

Shovels and Spades.
Ames' Black Shovels.....₱ doz $14 50
" Polished " ..... " 15 50
" Patent " ..... " 18 00
Alling " ..... " 16 00
" " Moldens' ..... " 18 00
Crane's Black " ..... " 11 50
" Polished " ..... " 12 00
Smith's " " B. S. L. H. Rd. Pt.... " 13 50
" " " B. S. D. H. Rd. Pt.... " 14 00
Ames' Black Spades..... " 16 00
" Polished " ..... " 17 00
" Patent " ..... " 17 50
Alling " ..... " 16 00
Crane's Black " ..... " 12 50
" Polish'd " ..... " 13 50

Scoops.—Alling Steel Polished, No. 2.....₱ doz, $13 50
Alling Steeled Polished, No. 3..... " 14 00
" " No. 4..... " 14 50
" " No. 5..... " 15 50
" " No. 6..... " 16 50
" " No. 7..... " 17 50
" " No. 8..... " 18 50
" " No. 10..... " 21 50
Crane's Polished, No. 5..... " 13 50
" No. 6..... " 14 50
" No. 7..... " 15 50
" No. 8..... " 16 50
Crane's Black Coal, No. 4..... " 17 50
" No. 5..... " 18 00
Preston, Black Scoops No. 1..... " 12 00
" " No. 2..... " 12 50
" " No. 3..... " 13 00
" Half Pol. Scoops No. 1..... " 12 50
" " " No. 2..... " 13 50
" " " No. 3..... " 14 50
Lippincott, Half Pol. No. 2..... " 15 00
" " No. 3..... " 16 00

Wrenches.—Taft's.....dis 60 %
Coe's Imitation.....dis 50 %
Coe's Genuine.....dis 30 %

Wringers.—Novelty Clothes Wringer.....₱ doz $69 00
Universal Clothes Wringer..... " 72 00

Chicago Metal Market.

(Reported by Cragin Bros. & Chandler, 141, 143, and 145 Lake St.)

Tin Plate.—
IC, 20x14, Coke.....$12 00
IC, 10x14, Charcoal. 13 00
IX, 10x14 " . 16 00
IC, 12x12, " . 13 50
IX, 12x12, " . 16 50
IC, 14x20, " . 14 00
IX, 14x20, " . 16 00
IXX, 14x20, " ... 20 00
IC, 14x20, Coke Roofing..... 20 00
IC, 10x20 Coke, for Gutters..... 12 50
IC, 14x20, Charcoal Roofing..... 13 50
IX, 14x20 " 15 50
IC, 20x28, " 26 00
IX, 20x28, " 31 00

Pig Tin.—
Large, 60 ₱ .....23c | Small, 30 ₱.....34c
| Bar Tin.....33c

Zinc.—
In casks 1000 ₱ s.....c | In sheets.....11 c
" 500 " .....10½c | Slab.....9c

Copper.—Copper Bottoms.....35c
Sheathing Copper.....34c
Planished Copper.....41c
" " cut to lengths.....43c

Braziers' Sheets, 30x 60.—6 to 8 lbs.....41 c
10 and 12 lbs.....38c

Solder.—Extra Fine, C. H. & Co.'s Brand..25c
Fine, No. 1.....23c

| 15 to 100 lbs.....35c
| Ingot Copper.....
| Bolt " 45c
| Ordinary, No.....20c
| Plumbers' Solder.....30c
| Braz'rs' or Spelt'r Solder.35c

Antimony......20c
Babbit Metal.....15c ¼ 25c.

Galvanized Iron Conductor Pipe.....₱ ft 10c

Sheet Iron.—

| Common. | Smooth. | Charcoal.
No. 14 to 24.. | 5½c | 6¾c | 8¼c
25 & 26..... | 5¾c | 7 c | 8½c
27..... | 6 c | 7¼c | 8¾c

Add ¼c ₱ lb for 30 in. wide.

Galvanized Iron.....dis 15 %

No. 16 to 20.....12c | No. 27.....15c
21 to 24.....13c | 28.....16c
25 & 26.....14c |

Russia Iron.— | No. 1 Stained.....20c
Perfect.....22c | In Sheets, 1c. higher.

American Russia.— | B.....11c
A.....15c | In sheets, 1c higher.

Lead.— | Lead Pipe, in full coils 10 c
Pig.....8 c | Lead Pipe, when cut. 10½c
Bar.....9½c | Sheet Lead.....10½c

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 42 to 48 Batterymarch St.)

Anvils.—Eagle, ₱ lb 11c. currency.....dis 15 @ 15&5 %
Axes.—Forester's Favorite, Bronzed.....$13 00
Blue Jackets, Blue..... 12 50
Chopper's Pride, Bronzed..... 11 00
Red Cross, Red..... 10 50
Red Cross, Handled..... 13 50
Boy's Handled Blue Jackets..... 12 00
Hunts Axes.....₱ doz $15 @ 17 50 net @ 5 %
" Hatchets.....net
Shingling Nos. 1, 2, 3.....₱ doz $7 25 8 00 8 75
Claw " 1, 2, 3..... " 7 75 8 50 9 25
Lathing " 1, 2, 3..... " 7 50 8 25 9 00
Axe Handles.—Hickory, Fisher Pat., No. 1 ₱ doz $2 75
Hickory, Fisher Pattern..... " 2 " 2 00
Oak, " " ..... " 1 " 2 75
" " " ..... " 2 " 2 00
" " " ..... " 3 " 1 50
Bells.—Hand.....dis 60&10 %
Bolts.—Carriage, Phila. " Girard Works.....dis 50 %
Borers.—Angle, Backus.....dis 30 %
Boring Machines.—Angle.....each $4 75
Common, Snell's quality.....each 3 75
Breast Drills.—Miller's Falls, $30 per doz.....dis 25 %
Braces.—Barber's.....dis 40 %
Backus'.....dis 50 %
Spofford's.....dis 40 %
Butts.—Union Drilled Loose Joint.....dis50 %
" " Acorn Loose Joint.....dis 50 %
" " Fast Narrow.....dis 50 %
Brass Butts.....dis 30 %
Wrought Table Butts and Back Flaps.....dis 30 %
Wrought Narrow Butts.....dis 30 %
Carriage Jacks.—Young America.....₱ doz $24 00
Cartridges.—" U. S. Cartridge Co."..... dis 50 %
Chisels.—
Socket Framing M., B. & D's, warranted...dis 60& 10 %
Traps.—Oneida.....dis 20 %
Blake's.....dis 20&5 %
Vises.—E. P. & Co.'s Solid Box, Blacksmith...₱ lb 14c
Parker's Parallel.....dis 10 %
Backus.....dis 25 %
" Howards." Parallel.....dis 15 %
Fisher & Norris' Double Screw Paral'l..dis 15 @ 15&5 %
Weights.—Window Weights.....₱ lb 2½c
Wrenches.—Coe's Genuine Wrenches.....dis 40 %
Wringers.—

| | | | |
Novelty and Universal | Tub No. 2 | less than 5 doz.. | ₱ doz | $ 72 00
| | | 5 doz.. | ₱ doz | 69 00
| | | 10 doz.. | ₱ doz | 67 00
Monitor, Double Cogs | | | per doz | 68 00
Novelty Bench, No. 4, | | less than 5 doz.. | ₱ doz | 108 00
| | 5 doz.. | ₱ doz | 104 00
| | 10 doz.. | ₱ doz | 101 00

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.—₱ box
I. C. Char. 10x14 @ $12 50
I. C. Coke 10x14.. 11 00

Pig Tin.— ₱ lb
Banca..... 36c

Copper.— ₱ lb
Sheathing..... 35c

Lead.— ₱ lb
Pig..... 7½c
Char. Roof. I C, 10x14 $12 00
Coke " I C, 10x14 11 00
Straits..... 31c
English..... 30c
Bolt..... 35c
Ingot..... 26c
Sheet and Pipe..... 9c

Spelter...... ₱ lb 9¼c
Zinc.—Sheet..... ₱ lb 10¼c
Antimony...... " 16c
Iron.—Sheet Iron, Russia..... " 19c
Sheet Iron, English..... " 5¼c
" " American Refined..... " 6¼c
" " Galvanized..... " 11¾c
Plate Iron..... "
Swedish and Norway Bar Iron, gold.....₱ ton, $125 00
" " " Shapes, gold..... 142 50
Norway Nail Rods, first quality, gold..... 162 50
" " second " " 147 50
Best Refined Bar Iron..... 75 00
The "Burden Best" Iron..... 172 00
American Pig Iron, Foundry, No. 1, x..... 38 00
" " No. 2, x..... 36 00
" " Gray Forge..... 32 00
Scotch Pig Iron.....₱ ton 41 00 @ 48 00
Wrought Scrap Iron..... 42 50
Steel.— ₱ lb
Eng. Tool..... 12c
American Tool 15¼c
" Spring 11c
Bessemer 7¾c

| German..... 11 c
| Spring..... 8 c
| Tire..... 7 c
| Sleigh Shoe..... 5¾c
| Toe Calk..... 8 c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Anvils.—Armitage.....₱ lb, gold, 15c
Peter Wright's..... " 14
Wilkinson's..... " 12

Apple Parers.—Conqueror.....₱ doz, $9
Lightning..... " 9
Turn Table..... " 9 00

Augers and Bits.—Cook's.....dis 25 %
Ives.....dis 20
Jennings.....dis 5 %
Snell's.....dis 12½ %

Axes.—Hunt's.....₱ doz $14 00 @ 15 00
Lippincott's..... " 13 00 @ 14 00
Lippincott's Pioneer..... " 13 50 @ 14 50
Simmons'..... " 13 00 @ 13 50

Axles.—Kritch & Crane Mfg. Co.'s—
Patent Taper Axles.....new list net
Swelled Taper Axles.....new list net
Concord Axles.....new list net
Red Jacket Axles.....new list net
Common Axles, 1½ inch and upward.....₱ lb, 8½c
" " less than 1½ inch..... " 9½c

Bellows.—"Best St. Louis make" 60c ₱ in. dis 20 %

Bells.—Troy, Church.....₱ lb, 50
Light Brass, Hand.....dis 50 %
Moore's, Cow.....dis 20 %

Bolts.—Arms, Bell & Co.'s Machine.....dis 20 %
Arms, Bell & Co.'s Carriage and Tire.....dis 70&15 %
Cast Iron Barrel, Shutter, &c.....dis 25 %

Cast Butt Hinges.—Narrow Fast Joint.....dis 35 %
Broad Fast Joint.....dis 40 %
" Loose " .....dis 50 %
Reversible.....dis 45 %
" Japanned and Silver Tipped.....dis 45 %
Loose Joint "Acorn" " " .....dis 40 %
Excelsior Reversible Blind.....dis 30&10 %
Lull & Porter's Blind.....dis 45 %

Wrought Butts.—Narrow.....dis 30 %
Reversible.....dis 25 %
Broad.....dis 25 %
Table Hinges.....net list
Back Flaps.....net list
Inside Blind Hinges.....net list

Chain.—Eng. Coil. 3-16 ¼ 5-16 ⅜ 7-16 ½ in.
13 11 10 9½ 9 8c gold
Trace.....6½ 10-2 70c "
7-10-2 72c "
German Coil and Halter.....revised list add 10 %

Chisels.—Socket, Firmer or Framing.....@ 1,55 %

Clothes Wringers.—Crown.....₱ doz $60 00
Novelty..... " 72 00
Universal..... " 72 00
Monitor..... " 72 00

Corn Knives.—Dunn E'ge T'ol Co.'s Clip..₱ doz $5 75
Disston's..... " 6 00

Crow Bars.—Steel Pointed.....₱ lb 7@9c
Solid Cast Steel..... " 20c

Cutlery.—J. Russell & Co.'s.....
Lamson, Goodnow & Co.'s..... } new list, dis 15 %
Landers, Frary & Clark's.....

Files and Rasps.—
Nicholson's Mill Files.....$5 50 to the £, currency
Nicholson's Other Files.....5 00 to the £ currency
Butcher's Mill..... 6 75 to the £, currency
Heller's & Lyon Horse Rasps.....5 25 to the £, currency

Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks.....dis 30 %
" " Handled Hoes.....dis 30 %
" " Planter Eye Hoes.....net list
Winsted's Planter Eye Hoes.....net list

Hammers.—Yerkes & Plumb.....new list net
Masons' Hammers.....₱ lb 20c
Smith Hand Hammers..... " 22c

Handles.—Axe.....Extra. $2 75 | No. 1. $2 25 | No. 2. $1 75 | No. 3 $1 00
Pick.....Extra. $2 50 | No. 1. $2 00 | No. 1½. $1 75 | No. 2. $1 25
Smith & Montross Fork, Hoe and Rake.....dis 20 %
" " Broom and Mop.....$12 @ $15 ₱ M

Harrow Teeth.—1 inch iron.....₱ lb 4½
⅞ and ¾ inch iron..... " 4¾
⅝ inch iron..... " 5
Barbed or Headed.....½c extra

Hatchets.—Hunt's.....net list
Simmons'.....dis 10 %

Hay Knives.—Lightning.....₱ doz $22 |
Dunn Edge Tool Co.'s.....₱ doz $14 50—dis 15 %
Fisher's..... " 16 50—dis 10 %

Hinges.—Strap and T—St. Louis make.....dis 25 %

Horse Nails.—Eureka.....25c rate
Ausable.....22c "
Northwestern.....22c "
Eagle.....19c "
National Patent Pointed.....21c "
" " Extra Finished.....23c "

Horse Shoes.—R. I. (Perkin's pat.).....₱ keg $6 25
Burden's..... " 6 25
Mule Shoes..... " 7 25
Rhode Island Trotting Shoes..... " 6 75

Locks and Latches.—
Jones & Nimick's.....revised list dis 40 %
Moorhead, Adams & Co.....revised list dis 40 %
Norwalk Lock Co.'s.....revised list dis 40 %

Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks....₱ doz. $15 00 @ 16 00
" Grub Hoes, Oval Eye....₱ doz. 12 00 @ 13 00

Nails.—Wheeling.....$4 35 rates
Orders for 100 kegs 10c ₱ keg less.

Picks.—Klein, Logan & Co.'s R. R. and Clay ₱ doz.$12 00
Klein, Logan & Co.'s Coal..... " 9 75
" " Poll..... " 12 00
" " Stone..... " 16 50
" " Tamping..... " 19 00

Planes.—Ohio Tool Co.'s.....dis 20 %
Sciota.....dis 25 %

Post Hole Augers.—Clark's Patent—
No. 1, ₱ doz. $27; No. 2, $30; No. 3, $32.....dis 20 %
Barton's Patent.....₱ doz $25—dis 20 %
Vaughn's " .....25—dis 10 %

Sad Irons.—Monitor Brand, Silver Polished...₱ lb 8c

Sash Weights.—Standard Solid Eyes.....₱ lb 3½c

Saws.—Disston's.....dis 10 %
Spear & Jackson's.....$5 00 to £ gold
Hubbard, Lippincott, B. & Co.'s.....dis 10 %
Branch, Crooks & Co.'s.....dis 10 %
Livingston's Patent Buck.....net list

Screws.—American Screw Co.'s revised list.....c.s 45 %
$2000 worth in 6 months.....2½ % extra

Scythes.—Blood's C. S. & G. S.....net list
Dunn Edge Tool Co.'s.....new list dis 25 %
Paris Furnace Co.'s.....dis 25 %
Waldron's English.....$10 00 to £

Scythe Stones.—No. 1 ind'n Pond ₱ gr's, $7 00 | dis 25 %
Extra Indian Pond..... " 7 50
Premium..... " 9 50
Diamond Grit..... " 13 50

Shovels, Spades and Scoops.—
Ames'.....revised list dis 5 %
Lippincott's.....new list dis 10&5 %
Rowland's, Maxwell.....revised list dis 12½ %

Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished.....₱ lb, 17c
Solid Cast Steel..... " 35c
Striking Sledges.....₱ lb extra, 1c

Snaths and Cradles......dis 25 %

Springs.—Cleveland Spring Co.'s—
Carriage and Express.....dis 5 %
Blue Seat Springs.....new list dis 10 %

Tacks.—Norway Tack Co.'s ½ weight.....dis 70 %
Brads.....dis 50 %

Thimble Skeins.—Pump & Skein Co.'s....dis 50&5 %

Traps.—Newhouse Patent.....dis 15 %

Vises.—Solid Box.....₱ lb 16c
Wilson Mfg. Co.'s.....dis 10 %

Wrenches.—Coes' Genuine.....dis 30 %
Coes' Pattern.....dis 40 %
Taft's.....dis 50 %

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.

Tin Plate.
IC, 10x14, Charcoal...$13 50 | IC, continuous, 20 in. x 200 ft.....
IX, 10x14, " ... 16 50 | IX, continuous, 20 in. x 200 ft.....
IC, 12x12, " ... 14 00 | IC, 10x14, best Coke..$12 50
IX, 12x12, " ... 17 00 | IC, 10x14, good " .. 12 00
IC, 14x20, " ... 14 50 | IC, 10x20..... 20 00
IX, 14x20, " ... 17 50 | IC, 14x20..... 12 00
IC, 20x28, Terne..... 13 00 | IC, 14x20, Coke Lead. 12 00
IX, 14x20, " 16 00
IC, 20x28, " 26 00
IX 20x28, Terne..... 31 00

Block Tin.
Large Pigs.....28c | Bars.....40c
Small " 29c

Sheet Zinc.
Casks.....₱ lb 10 c | Sheet.....₱ lb 11c

Solder.
No. 1, Refined, in bars or plate.....25c
No. 2, " " " 23c
Pig Lead.....8½c

Sheet Copper.—18 to 100 lbs. Sheets 30x60.....32c
14 to 16 lbs., Sheets 30x60.....35c
10 to 12 lbs., " and 20x72.....38c
6 to 9 lbs., " 41c
Tinned, 14 and 16 oz. 14x48.....38c
Planished, 14 and 16 oz. 14x48.....41c
" No. 7, 8 and 9.....43c
Copper Bottoms.....37c

Sheet Iron.—

| Com'n | Sm'th. | Char'l. | Juni.
No. 16 to 20.... | 5½c | 6c | 8¼c | 10¼c
No. 22 to 24..... | 5¾c | 6c | 8¾c | 10¾c
No. 26..... | 6c | 6¼c | 8¾c | 10¾c
No. 27..... | 6¼c | 6¼c | 8¾c | 10¾c

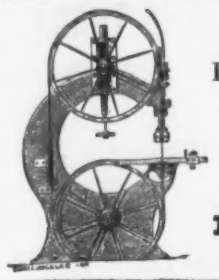
Galvanized Iron.....dis 10 %
Iron Rivets.....dis 15 %
Iron Wire.....dis 30 %
Coppered Market Wire.....dis 45 %
Copper Rivets and Burs.....dis 10 %
Russia Iron.—Nos. 9, 10, 11 and 12, ₱ lb.....21c @ 22c
No. 1, stained, ₱ lb.....20c
Imitation Russia, ₱ lb.....16

Machinery, &c.

ANDREW WATSON,
MACHINIST and ENGINEER,
Nos. 537 & 539 Dickinson Street,
Near Trenton Avenue, 19th Ward, PHILADELPHIA.

Builder of *Vertical Steam Engines and Boilers*, peculiar for their economy of space and fuel, safety and quickness in raising Steam. Also, sole manufacturer of *Improved Balance Governor* with automatic stop, *Balance Slide Valve, Safety Valves, Stop Valves, Improved Pistons for Engines*, which require no setting by the Engineer. Engine Builders and Dealers supplied with *Governors, Stop Valves, Safety Valves, &c., &c.* These governors are fitted up in the very best manner, with brass Valves and Seats, which will not corrode or stick fast. Guaranteed to regulate under any irregular load which an Engine is subject to. Millwright work executed, and Machinery in general satisfactorily repaired.

Engines Indicated Promptly and with the Greatest Accuracy.



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"Perin" French Band Saw Blade
KEPT IN STOCK.

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22nd above Arch, PHILADELPHIA.

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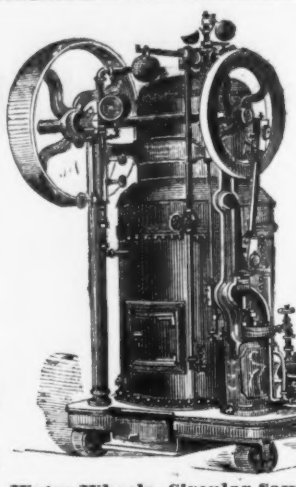
COMPACT,
PRACTICAL,
DURABLE,
ECONOMICAL.
$200·00.



Cheaper than any Engine offered of the same capacity.

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POWER LOOMS, with (new) Patent Box Motion. SPOOLING, BEAMING, DYEING and SIZING MACHINES.
BOBBIN WINDING MACHINES—wind direct from hank or skein to shuttle bobbin.
SHAFTING, with Patent Adjustable Self-Oiling Bearings.
PLANS taken, and FACTORIES fitted out complete with Shafting and Gearing.
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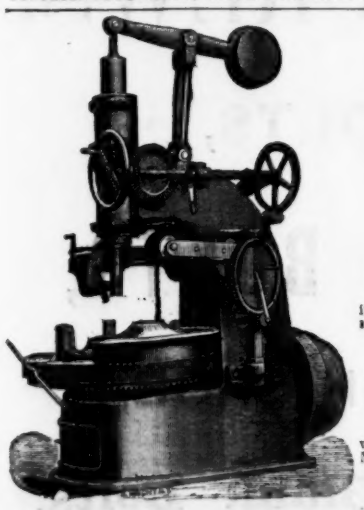
Machine and Foundry Work in all their branches. Send for Price List of Pulleys & Shafting.



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Single & Double Head BOLT CUTTERS,
That will cut from 5000 to 10,000 per day.
Bolt Pointers, Tapping Lathes, Tire Blank and Rivet Headers, Engine Lathes, &c.
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Established 1848.

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RAILWAY SHOP EQUIPMENTS.
Our Steam Hammers, Lathes, Planers, Drills and Bolt Cutters
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WESTON'S
PATENT DIFFERENTIAL
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Warranted superior to any made.
RATCHET DRILLS,
Machine Finished, Case Hardened and Interchangeable.
Self-Sustaining Rope Pulley Blocks

Being worked with a rope the motion is quick and steady, and in many cases is more suitable than the chain block. It is self-sustaining, the eccentric brake being put in or out of action by moving the hand-rope to the right or left, or by pulling the rope outward. The weight can be lowered or sustained at any desired point.

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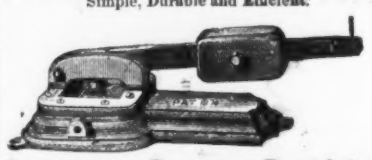

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SAFETY, ECONOMY & DURABILITY.
MURRILL & KEIZER, Baltimore.
Agents Wanted. Send for Circulars.

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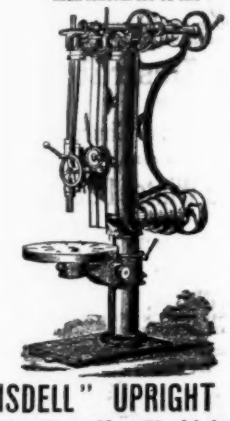

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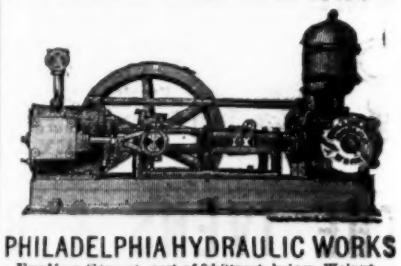

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A " " "	40 cts. ℔	G	16 cts.
B " " "	35 cts. ℔	H	14 cts.
C " " "	30 cts. ℔	I	13 cts.
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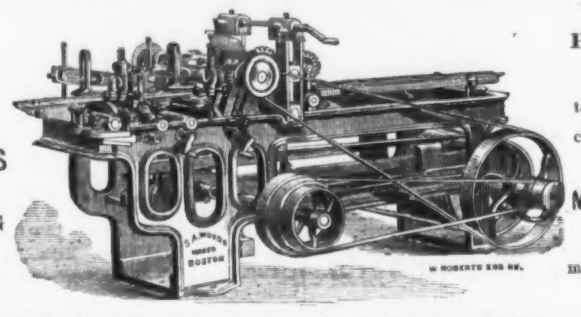

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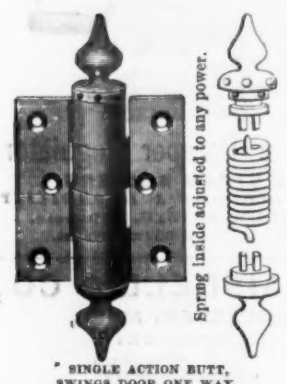

SINGLE ACTION BUTT, SWINGS DOOR ONE WAY.

Very Desirable

FOR

Stores, Banks & Churches,

AND ALL

Outside Winter Doors.

Used in the

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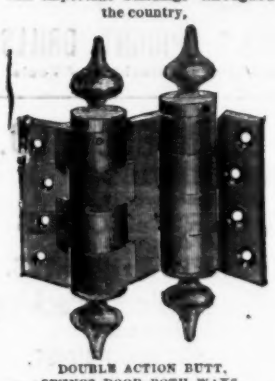

DOUBLE ACTION BUTT, SWINGS DOOR BOTH WAYS.

Swing doors either way, allowing continual passing, and close them promptly, without noise.

Invaluable in cold weather, and in summer can be used as ordinary hinges.

Noiseless Double Action Butt, as seen upon the door, swinging it both ways.

Prices Greatly Reduced, Oct. 1st, 1873.

Single Action.		Double Action.	
4 in. No. 6	$2 00	4 in. No. 50	$4 50
5 " " 11	3 00	6 " " 52	6 50
6 " " 16	4 00	7 " " 54	9 50
7 " " 22	5 00	8 " " 56	12 50
8 " " 26	6 50	8 " " 57	12 50
10 " " 31	8 50	10 " " 60	16 00

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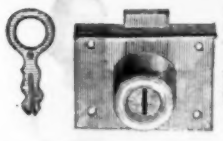

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Saves 50 per Cent.

In wear of Dies and Punches and time lost in changing them. At **same speed** with the old Press, this gives **double the time** to adjust the work, insuring accuracy and greater production.

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In which we are prepared to supply the most *intricate* wants. Our determination to give the trade the most superior article and quality has compelled us, for the past three years, each year to double our capacity, which should be a sufficient guarantee of the unrivaled merit of our production.

Soliciting the knowledge of your wants, we remain, yours, respectfully,

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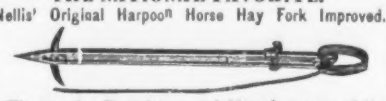
Nellis' Original Harpoon Horse Hay Fork Improved.



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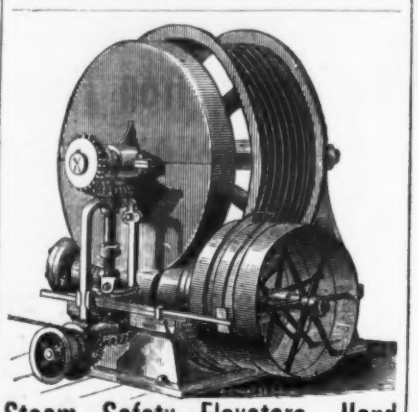

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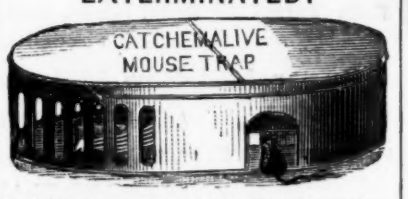
Every Mouse in the World to be EXTERMINATED!



Each Mouse caught resets the Trap for another.

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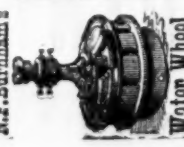

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